

October 15, 2008

MEMORANDUM

UTAH DEPARTMENT OF TRANSPORTATION

TO: Jim McMinimee, P.E., Chairman

FROM: Barry Axelrod
Recorder, Standards Committee

SUBJECT: Standards Committee Meeting Minutes and Next Meeting

The next meeting has been scheduled for Thursday, October 30, 2008 at 8:00 a.m., in the main 1st floor conference room of the Rampton Complex.

| Item | Remarks | Sponsor |
|--|-----------------------------------|---|
| 1. Minutes of August 28, 2008 | For approval | Barry Axelrod |
| 2. Supplemental Specification 00727M, Control of Work and UDOT Policy 08-6, Use of Corporate Logos or Branding | For approval (doc page 19) | Stan Burns Robert Miles Barry Axelrod |
| 3. Supplemental Specification 03055, Portland Cement Concrete | For approval (doc page 36) | Bryan Lee John Butterfield |
| 4. Standards Committee Development Process for New Standards | For approval (doc page 57) | Stan Johnson Barry Axelrod |
| 5. Barrier Offset Related Standard Drawings (See listing) | For approval (doc page 80) | Robert Miles |
| 6. Supplemental Drawing BA 3C1 and BA 3C2, Precast Constant Slope Barrier | For approval (doc page 122) | Glenn Schulte |
| 7. Supplemental Drawing TC 4E, Project Notification Sign 5 ft x 3 ft, 10 ft x 5 ft, and 12 ft x 8 ft and TC 4F, Lane Gain Project Notification Sign 5 ft x 3 ft, 10 ft x 5 ft, and 12 ft x 8 ft. | For approval (doc page 135) | Wes Starkenburg |
| 8. Review of Assignment/Action Log | For review (doc page 16 & 147) | Jim McMinimee |
| 9. Meeting Improvements (on-going agenda item) | For discussion | Jim McMinimee |
| 10. Other Business | For discussion | Jim McMinimee |

JCM/ba

Attachments

cc:

| | | |
|--|---|----------------------------|
| Cory Pope Director, Region One | Stan Burns Engineering Services | Robert Miles Standards |
| Randy Park Director, Region Two | Fred Doehring Bridge Design | Barry Axelrod Standards |
| David Nazare Director, Region Three | Greg Searle Construction | Patti Charles Standards |
| Nathan Lee Director, Region Four | George Lukes Materials | Shana Lindsey Research |
| | Richard Clarke Maintenance | Tracy Conti Operations |
| | Robert Hull Traffic and Safety | Vacant FHWA |
| | Michael Adams Traffic Management Division | Mont Wilson AGC |
| | Brad Humphreys Region 1, Preconstruction | Tyler Yorgason ACEC |

Agenda Listing

Item 5:

BA 1D, Precast Concrete Full Section Median Installation (New Jersey Shape)
BA 1E, Precast Concrete Full Section Shoulder Applications (New Jersey Shape)
BA 4E1, W-Beam Guardrail Installations
BA 4E2, W-Beam Guardrail Installations
BA 4L, W-Beam Guardrail Curve Details
CC 5A, Grading And Placement Details Crash Cushion Type C “Brakemaster”
CC 5B, Grading And Placement Details Crash Cushion Type C “C.A.T”
CC 5C, Grading And Placement Details Crash Cushion Type C “FLEAT-MT”
CC 7A, Grading And Installation Details Crash Cushion Type F Quad Trend 350
CC 7B, Crash Cushion Type F BEAT-SSCC
CC 8A, Grading And Installation Details Crash Cushion Type G
CC 8B, Grading And Installation Details For “3R” Projects Crash Cushion Type G
CC 9A, Grading And Installation Details Crash Cushion Type H
CC 9B, Grading And Installation Details Crash Cushion Type H (Parabolic Flare)
DD 8, Structural Geometric Design Standards For Clearances
DD 9, Structural Geometric Design Standards
DD 17, Grade Separated Arterials Other Than Freeways 50 to 60 MPH

August 28, 2008

A regular meeting of the Standards Committee convened at 8:00 am, Thursday, August 28, 2008, in the Project Development Conference Room, 4th floor, of the Rampton Complex.

Members Present:

| | | |
|---------------------------------|--|-----------------|
| Jim McMinimee | Project Development | Chairman |
| Robert Miles | Preconstruction, Standards, and Local Government | Secretary |
| Barry Axelrod | Preconstruction, Standards, and Local Government | Recorder |
| Stan Burns | Engineering Services | Member |
| Brad Humphreys | Region 1, Preconstruction | Member |
| Greg Searle | Construction | Member |
| Lloyd Neeley for Richard Clarke | Maintenance | Member |
| Robert Hull | Traffic and Safety | Member |
| George Lukes | Materials | Member |
| Fred Doehring | Bridge Design | Member |
| Mont Wilson | AGC | Advisory Member |
| Tyler Yorgason | ACEC | Advisory Member |
| Anthony Sarhan | FHWA | Advisory Member |

Members Absent:

| | | |
|----------------|-------------|--------|
| Richard Clarke | Maintenance | Member |
| Randy Park | Region 2 | Member |
| Michael Adams | TOC | Member |

Staff:

| | |
|------------------|--|
| Patti Charles | Preconstruction, Standards, and Local Government |
| Bryan Lee | Materials |
| John Butterfield | Materials |
| Kris Peterson | Construction and Materials |

Visitors:

| | |
|--------------|------|
| Doug Atkin | FHWA |
| Bryan Dillon | FHWA |

Standards Committee Meeting

Minutes of the August 28, 2008 meeting:

1. Minutes of April 24, 2008 meeting were approved as written. There was no June 2008 meeting.

Procedural Note: Fred Doehring was introduced as the new Bridge Design representative replacing Richard Miller.

Discussion points were:

- None

Motion: Robert Hull made a motion to accept the minutes as written. Seconded by Stan Burns. Passed unanimously.

2. Supplemental Specification 00727M, Control of Work and UDOT Policy 08-6, Use of Corporate Logos and Branding (Agenda Item 2) – Presented by Stan Burns, Robert Miles, and Barry Axelrod.

Barry said the tasking came from the first floor and initially was just to research current guidance and write a policy on the use of corporation logos. Barry said after looking at the item he thought a specification was needed to cover the issue. Barry pointed out the memorandum (memo) in the package that covered the Consultant Services method of dealing with the subject on consultant projects. He said the memo was used to help create the policy and the Supplemental Specification. Barry said the Supplemental was created because the memo didn't apply to specifications. Barry said Stan and Robert would cover the history of the subject.

Stan said several years ago consultants were submitting their work with logos on the information. Stan said they didn't think it was appropriate to advertise on the final products, with the consultants agreeing. He said that for years contractors would be paid to put a sign at the end of projects indicating the project was "brought to you by." Stan said on bridge projects it is more like advertising the way they look at it. Stan said they asked contractors to remove the signs. Stan said the contractors were hesitant to comply so we came up with the policy. Stan, commenting to Mont, said some contractors may not be happy about the policy.

Discussion points were:

- Responding to Stan's comment Mont asked about the word "deliverable" and the meaning of the word. Mont ask what is a "deliverable" and what does it encompass. Is it paperwork, studies for design-build jobs? What exactly is considered a "deliverable?"

- Stan said on an RFP you have to put the name of your company on the submittal. Stan said he was talking about a plan set with a corporate logo, a construction device that has banners on bridges. Mont asked if we are trying to make a distinction between advertisement and identification. Stan said when you submit a proposal you have to have your company name on it. Stan said we are not talking about that. Mont asked if that is understood if you read this.
- Barry said you haven't gotten a contract yet if submitting a proposal, but you are trying to get one. A "deliverable" doesn't come about until you have a contract and it is what you signed the contract for. Barry said if you are trying to get a contract then anything up to the point of signing a contract is not a "deliverable." Mont asked if we are talking about physical work in the field that you don't want logos on. Stan said yes, adding a comment (couldn't understand what he said). Mont said that was fine, but it should be identified as such.
- Jim commented that "deliverables" should be expanded to include work items. Barry said they looked at that, but didn't go that way because a key item could be left off. He said that would lead to "if it isn't in the policy it must be okay." Barry commented that they may have gotten too generic, but didn't want to get too detailed. Robert commented on what Barry said earlier, is that it isn't enforceable until a contract is signed. Jim said it is so generic that our folks don't understand what a "deliverable" is.
- Barry said a lot of the comments received during coordination were incorporated in order to come up with this wording. He said a lot didn't make any comment. Robert asked if anyone during coordination asked about what a "deliverable" is. Barry said he talked to Mont on the phone about design-build, saying that was fine because it is pre-contract.
- Fred asked if the problem is that we are trying to combine design and construction in the same policy. Fred said he knows what a "deliverable" is from a design sense and may know from a construction sense. Stan commented on being more specific from a construction standpoint. Mont commented that it may not be that big a deal.
- Barry said he didn't see the problem. He said for a consultant if they are submitting an RFP, RFQ, or Letter of Interest they are previewing their company to get a project so that is fine, but once a contract is signed then whatever they are supplying whether it is a consultant or contractor can't have the logo information on the item being supplied. The item being supplied is the "deliverable."
- Stan asked if something could be added that defines what a "deliverable" is and is not. Barry said they could. Someone commented that the Consultant Services memo would also have to be updated.

- Lloyd said personally he is having a hard time understanding why having logos on the items is a problem. He said he would like to know that and that the company is proud of their work. Jim said it has been discussed in several Department management meetings and as such it is a matter of policy. Jim said our task was to write the policy and specification, not our obligation to look at it to see if it made sense. He said we were tasked to write the policy and specification around a management decision.
- Jim asked Mont if when they discuss the word “deliverable” is there another word more customarily used in construction that we can use. Jim asked if they are called “construction work” or “products.” Mont said “features,” “physical features,” or something like that. Mont said the word “deliverable” takes on the connotation of paperwork in their group. Fred said in the design world the “deliverable” is paperwork.
- Fred asked for example HDR does some structural calculations for him on a pad of paper with a logo and delivers it as part of the documentation for a project, do we allow that. Mont said that is a good example of the question they had. Mont asked about letterhead with a logo. Jim commented that the documentation isn’t the “deliverable” specified in the contract. Fred said plans, specifications, and all supporting calculations. Discussion then centered on the fact the public never sees those plans and paperwork. Jim said maybe we should add that the intent is the product that the traveling public sees. Fred said we have two different situations and one policy that covers both design and construction.
- Jim commented that the specification is geared strictly to construction.
- Stan asked if we should keep it simple with “deliverables” and “products” or define what the products are. Jim said he thought we could say both in the policy and add an “intent” statement to the specification. He suggested “to cover those work products that are seen by those outside of the Department” or something similar. Robert Miles said we have it worded two different ways, going on to quote the policy as one way and then in the specification we go with “deliverable.” Robert said if we are worried about documents we could add wording to cover “for public use,” “readily accessible,” or something similar. Robert said we went on two different approaches because the policy is not binding on contractors.
- Jim asked for a summary.
- Tyler, referring to the Supplemental, paragraph E1, asked what permanently attached means. He said they have magnetic logos on their trucks, asking if that is permanent.

- Barry said no, not based on the discussions they have had, but yes if bolted on. Someone asked about taking off the word “permanently.” Fred and Barry both said no. Barry said that was added for a reason. Fred said someone attached a very large banner to what they thought was a piece of equipment that was supporting a very large UDOT structure.
- Robert Hull asked what in this is prohibiting a contractor on a temporary site, next to the freeway from dropping a couple of posts in the ground and putting a banner up. He said in his opinion it says we can do that. Robert Miles asked, is it a vehicle, is it equipment, or is it apparel. There was a no to each. Robert Miles went on to quote the Supplemental saying “Logos or branding identification other than those permanently attached to vehicles, equipment, or apparel are prohibited. Robert said the main part, E, doesn’t strictly prohibit that and that you are countering yourself.
- Stan said that same thing came up when a contractor said my rigging is not on your “deliverable.” Barry said at one time they talked about “within project limits,” but that went away.
- Jim said there was a lot of discussion and it seems that more thought and work are needed. He said we are at the end of the construction season so that gives a little more time.
- Mont suggested the following wording. “The intent of this is that no banner will be affixed to any physical asset, deliverable, product, or whatever word you want to use as determined by the Resident Engineer.” Jim said there could be a lot of interpretations, depending on the area. Mont agreed.
- In response to a comment Jim said we will probably end up using a lot of the language in our Outdoor Advertising documents. Jim said it seems like overkill, but that he has faith in Stan Burns, Robert Miles, and Barry Axelrod that they will solve this.
- Commenting to Mont, Jim said he suspects that you will go through this with your group one more time, related to ABC. Jim said if you have specific inputs prior to the next meeting he knows you will get it to these guys.
- Jim said the intent is to disallow advertising.
- Mont said other than with respect to Design - Build bid submittals he has not heard anything.

Motion: None

Action Item: Stan, Robert, and Barry to update wording to meet discussion requirements.

3. Supplemental Specification 03055, Portland Cement Concrete (Agenda Item 3) – Presented by John Butterfield and Bryan Lee.

Barry said the item is now for information and not approval based on a last minute change from Materials.

John said some of the changes are editorial and other are cleaning up references. He said one main issue was the generic hot and cold weather limitations that were inadvertently left out of some sections for the 2008 Standards when they were printed. He said they were included in some sections, but not all so he went back to his original philosophy that anything constructed with Portland Cement Concrete would be covered by putting the requirements in this section. John said it would be easier for UDOT and the contractor this way. He said the only problem is that by having it in more than one location they could end up with a conflict. John said that will be addressed in the next publication.

John said the other issue and big change is submittals, specifically trial batching. He said in the past UDOT was required by specification to witness trial batching. He said in today's world where they are short on resources, and with suppliers and contractors being extremely sophisticated in this area, and more so than we are, they thought it was appropriate to take that requirement out. He said it would be an option they can apply. John said the contractor would do the trial batch and submit the data to them along with the credentials of those doing the task. He added that the specification includes safeguards. He said we no longer need someone on site witnessing that process.

Discussion points were:

- Based on earlier input for delaying the item, Barry asked specifically what were they taking to the Region Materials Engineers next week.
- John said one change dealt with fly ash. He said fly ash use to be considered a cheap replacement for Portland cement, but that is no longer the case. He said it is as expensive if not more given the situation based on trucking costs and supply issues. John said the specification change needs to be updated with language so fly ash is no longer just a generic requirement anymore. He said it will be something to be looked at as part of the trial batch whether needed or not. Is it being put in to mitigate ash fly reactive activity and if so is it doing that or do we need it? John said his thought was to leave it up to the contractor.
- John went on to discuss the mix components. He said the new part came up this week so they wanted to handle it at the same time.
- Referring to document page 55, Fred commented about the cold weather temperature requirements, asking about pre-casting in a building. John said the pre-cast specification should cover any additions, clarifications, or changes to this and were intended to be very generic.

- Fred said his concern was waiving the requirement if they are pre-casting inside or in controlled conditions. John said they can always submit a hot or cold weather plan.
- Referring to the same page in the package, paragraph 9 and 10, Stan asked about the temperature requirements in those two paragraphs. John said he would look at it and correct if needed by the next meeting to make the information clearer. He said he knew what the intent was of the statements.
- In response to a comment John said there is some consideration for AASHTO and ASTM to come together. He said as of today they are getting close but still not together.
- There was no further discussion.

Motion: None

Action Item: John to look in to the wording changes discussed in the meeting. The change will be taken to the Region Materials Engineers for review and the section updated accordingly.

4. Standards Committee Development Process for New Standards (Agenda Item 4) – Presented by Barry Axelrod and Stan Johnson.

Stan was not present at the start of the discussion so Barry introduced the item.

Barry said this item was confusing because the discussion at the last meeting covered two different discussions on one agenda item. Barry said those discussions are in the current agenda package. He said the discussion started with Robert Miles' item for the removal of the DD drawings from the Standards. He said that discussion moved into a bigger discussion on how for example ABC specifications and drawings needed to be approved by the Standards Committee or not. He said there were a lot of different comments and that he recommended just a review type item at the end of the agenda like Other Business.

Barry said they didn't want items approved knowing they would be brought back in the near future with a change. That is not the definition of a Standard. Barry said the discussion was how are these type items brought to the Committee. Barry said they could have an on-going item on the agenda that covered this with a short 15 - 20 minute discussion. Barry said over a year or so the Committee would be familiar with the item and be in a better position to approve it as a Standard. Barry said if not done this way the Committee would be hit cold with the items that could delay the process to approve them.

Barry said that was what he thought the process was supposed to cover. Barry said that Stan Johnson met with Patti and him to discuss the direction. Then made some recommendations on who to contact to see how they develop new specifications and drawings. Barry said the first plan Stan put together actually came out as more of a flow plan for Research on how they would go through their process and not Standards.

Barry said at that point he got more involved in helping come up with this plan. Barry said this one is based on how they work right now with the additional requirement of the information only item. Barry went on to discuss parts of the flow plan.

Barry said the question now is does this plan hit what the tasking was at the meeting or is it somewhere between this and what Stan first came up with.

Discussion points were:

- Shana commented that Stan had not gone back to coordinate the changes with those he worked with in the beginning. Barry said that list was to contact people to see how they came up with the concept and got started. Barry said all of that is still basically in the current flow plan in the top couple of items. Nothing after that impacts those meetings.
- Barry said the way he understood it, it dealt with Standards Committee involvement, where the initial flow chart Stan did, didn't address the Standards Committee at all. Barry commented that what Stan did was still good work and that it can be used in their area and to lead into our flow plan. It just never initially addressed the Standards Committee.
- Stan Burns commented on the ABC process. He said they have done a lot of ABC projects this summer, one of which is deck panel replacements. Stan said last spring they developed specifications and drawings for pre-cast decks. Stan said changes were recommended by those using the specifications and drawings so they are making those changes. Stan asked the Committee what input they want to see, the entire process or the final process. Stan asked if the Committee wanted to see the very first attempt. He said the specifications and drawings will change.
- Barry commented that in the past that was how it has always been. He said they tell people to use the specification or drawing for a construction season or two before bring it to the Committee. Barry said the flow plan kind of covers that, but we never had that written down anywhere. Barry said for example Stan in two years comes in with a specification, saying they have used it for two construction seasons and that he has gone through the coordination process. Barry said the Committee discusses it and approves it and we move on. Barry said that is how the process has worked.

- Barry said now they are adding a third item to the process where the item comes for discussion to update the Committee. Barry said if there is any input that's fine, but there isn't going to be any coordination because it isn't an approval item. He said the purpose is to bring information to the Committee. Barry said they have skipped that part in the past, with the item just showing up when ready for approval.
- Barry said they could still do that with the ABC items, but the question came up on what did the Standards Committee prefer to see, wait and get it all at once or some other process. Barry said that is what they are trying to come up with as he understood the tasking.
- Shana said the question for the group is do you want to be updated as we update our specifications without really passing it as a Standard because we know it is going to be changing and we want to make the group aware. She said the information would be on the Web so anyone wanting the information could have it, but if the item changes, does this group want to see them. Mont said from his perspective if you make a change and consult with industry about it then he is fine with it. Shana said once they get to a point where they think they are there with a Standard then it can come to the Committee.
- Someone said he liked the idea of the item coming to the Committee before it goes out to be tested. Shana said she thought that was the direction the group wanted to go. Shana commented that when the item was changed the updated specification would be available on the web and that we need to get that information out to people. Shana suggested it be brought up at the AGC meeting, indicating Robert. Shana said that would let them know where they can find the information. Barry commented that the main people taking the specifications are going to be the designers. Shana said they wouldn't find it in the Standards, but in the contract as they are doing their bids or whatever. Barry said if they are doing bids it will be in the bid package as a special provision or plan sheet.
- Jim asked if the plan was to bring the process back next time for approval. Barry said today was for information and not approval, and that they have not really coordinated it. Barry said the normal coordination would really matter because it is a process. Barry asked Stan Johnson what he thought. Stan commented that he thought it should go back through the committee that helped put it together. Shana said that was what she was asking because they hadn't had a chance to see the change. Once that was done it could be brought back. Jim said you could let them know that the Standards Committee discussed it today and if they have any concerns beyond that we could discuss it again, other than that it could be implemented.

- Barry asked if for the most part was everyone comfortable with the basic flow. There was a yes. No one indicated otherwise. Shana said they would go back to the committee. Shana asked if everything was alright did this Committee want it brought back. Jim said if everything was cool and they wanted something different we would probably want to see it.
- Barry asked if at some point do we need to approve this process. Jim thought because it is a Standards Committee process he thought they should approve it. Barry commented that when approved it could be added to the Standards Committee policy. Shana asked if the flowchart could be in a policy. Barry said it would be an attachment to the policy with appropriate wording in the policy and procedure. Barry said he would figure out the wording and work with Stan Burns and Stan Johnson.
- There was no further discussion.

Motion: None

Action Item: Barry will coordinate the updated flow plan with those having the initial input and determine appropriate wording for the Standards Committee policy.

5. Review of Assignment/Action Log (Agenda Item 5)

Jim asked Barry to cover the action log. Jim said he was interested to know if there were items on the log that could be cleared up. Barry commented that he thought most could be cleared.

- **Item 1: Cracking problem.** Barry said when some drawings were changed last year a cracking issue was brought up. Barry said he discussed this with Richard Miller, indicating that Richard talked to Boyd and they determined there was no further action needed and that the item could be closed. Fred said he discussed this with Richard and agreed that it could be closed. He said they would continue to monitor panels for cracking. Item closed.
- **Item 2: Review process for Standards.** Barry said that is the one they just got done talking about. Barry said this one would be on-going.
- **Item 3: Continue coordination and review of the DD drawings for removal as a Standard and inclusion in respective manuals.** Barry said he discussed this with Robert Miles prior to the meeting and it was decided to leave them as is. Barry indicated the item could be closed. Item Closed.
- Barry said two items were closed, one was left, and two items added from today's meeting. He said one was the logos and the other the Portland cement concrete specification. Barry said there are no items dragging on for months or more like in the past.

- The status report as handed out at the August 2008 meeting follows:

Action Item Update for August 28, 2008 Standards Committee Meeting

Item 1, SW Standard Drawings, cracking issue. Richard Miller indicated there is no current impact. He discussed this with Boyd Wheeler and they recommend the item be closed.

Item 2, Review Process. Item on agenda.

Item 3, Continue coordination and review of the DD Drawings. After further review this item is being withdrawn. Item can be close.

6. Other Business:

- Jim moved on to other business and asked if the Committee had anything they would like us to look at. Barry said there was nothing he was aware of.
- Jim said he was going to assign Stan Burns and Richard Miller something and ask Susan to set up a meeting. Jim said the discussion today on ABC reminded him of a need the Department has with regard to concrete specifications and ABC. Jim said he has been talking about this for a while with Stan. Jim said he thought they should look at specifications for ABC elements that are maybe a different class of specification than we already have for our regular structures for Portland concrete. Jim said they will be working on ABC standards for concrete. Jim said Kris Peterson and Greg Searle would also be a part of this as would Richard Miller. Jim asked for suggestions for others to include. George Lukes would be another.

Action Item: Stan Burns and Richard Miller to form committee to look at concrete specification requirements for ABC.

- Jim asked if there was anything else the Committee would like to see looking forward at our Standard Specifications needs of the future. Fred suggested, along the same lines, pre-cast beams and the needs there. Jim asked if the same group could address this. Shana said to add Daniel Hsio to the group.
- Someone suggested a Materials asphalt specification as another item. The person was speaking too soft to figure out who it was and the exact subject. Jim said to put it on the assignment log for an update next time. Jim said that goes hand-in-hand with all the other work we are doing regarding asphalt over the next year.

Action Item: George Lukes to provide an asphalt specification update on new direction.

- Barry commented that they have had a couple of inquiries from other states about our processes. Barry said the timing was good because they had just finished the draft of the flow chart when Connecticut DOT sent out an e-mail request about the Standards approval process. Barry said he directed them to a copy of the flow chart. Barry added that CalTrans called looking for information. Barry said they are getting outside requests on how we do things.
7. Meeting Improvements (on-going agenda item) (Agenda Item 6): Jim asked if anyone had any meeting improvement suggestions.

Anthony Sarhan, FHWA, pointed out that he is leaving. Barry commented that Anthony had some great inputs on Standards Committee direction in relation to FHWA and that he will be missed. Anthony said he would update Barry on the new contact before leaving.

Barry pointed out that the next meeting is October 30, same time and place. He said there may be four or five items for the agenda.

A motion was made, seconded, and approved to adjourn.

The next regular meeting of the Standards Committee has been scheduled for Thursday, June October 30, 2008, at 8:00 a.m., in the 1st floor conference room of the Rampton Complex.

Approval of Minutes: The foregoing minutes were approved at a meeting of the Standards Committee held _____, 2008.

Assignment/Action Item Log

| Date Initiated/Updated | Item # | Action | Assignments | Status | Target Date |
|------------------------|--------|---|---|--------|-----------------------|
| April 24, 2008 | 1 | - Review Process. Develop a plan for the review of new technology by the Standards Committee. | Shana Lindsey | Open | October 2008 meeting. |
| August 28, 2008 | | - Coordinate the updated flow plan with those having the initial input and determine appropriate wording for the Standards Committee policy. | Stan Johnson Barry Axelrod | | |
| August 28, 2008 | 2 | Supplemental Specification 00727M, Control of Work and UDOT Policy 08-6, Use of Corporate Logos and Branding. Update wording to meet discussion requirements. | Stan Burns Robert Miles Barry Axelrod | Open | October 2008 meeting. |
| August 28, 2008 | 3 | Supplemental Specification 03055, Portland Cement Concrete. Look in to the wording changes discussed in the meeting. The change will be taken to the Region Materials Engineers for review and the section updated accordingly. | John Butterfield | Open | October 2008 meeting. |
| August 28, 2008 | 4 | Form committee to look at concrete specification requirements for ABC. | Stan Burns Richard Miller | Open | No target set. |
| August 28, 2008 | 5 | Provide an asphalt specification update on new direction. | George Lukes | Open | October 2008 meeting. |

| Closed Items From Last Meeting (August 28, 2008) | | | | | |
|--|--------------|---|---|--------|-------------|
| Date Initiated/Updated | Prior Item # | Action | Assignments | Status | Target Date |
| August 30, 2007 | 1 | - SW Standard Drawings. Research column cracking problem and if needed update the drawings per agenda item 11 from August 30, 2007 meeting. | Boyd Wheeler | Closed | Closed |
| October 25, 2007 | | - Not resolved. Not sure how big an issue. May require future change. | Contact changed to Richard Miller at later time due to personnel changes. | | |
| April 24, 2008 | | - Item reviewed. Richard Miller to review. | Richard Miller | | |
| August 28, 2008 | | - Coordination between Richard Miller and Boyd Wheeler indicated no further action required. Structures will monitor for future problems. | | | |
| April 24, 2008 | 3 | - Continue coordination and review of the DD Drawings issue. | Robert Miles | Closed | Closed |
| August 28, 2008 | | - Discussion and coordination prior to the meeting resulted in this item being pulled from further consideration. | | | |

Standards Committee Agenda Items Section

Submittal Sheets, Supplemental Specification Drafts, Standard Drawing Drafts, and other supporting data as required for the October 30, 2008 Standards Committee meeting follows.

Standards Committee Submittal Sheet

Name of preparer: Robert Miles and Barry Axelrod

Title/Position of preparer: Preconstruction Engineer/Technical Writer

Specification/Drawing/Item Title: Control of Work

Specification/Drawing Number: 00727M

Enter appropriate priority level:

(See last page for explanation) 3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Currently there is a Consultant Services memo, dated July 19, 2006 for use on Consultant contracts however this is not something used or referenced by Contractors. Because of the recent placement of banners on UDOT construction projects and questions/complaints on the usage, a modification to the Department Standards is needed. This change would prohibit the use of contractor logos or branding on any project deliverable.

Logos or branding identification on contractor owned vehicles, equipment, and apparel not prohibited.

- B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Not applicable.

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

Not applicable.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

Mont did not receive any inputs to initial request. Followed up with a phone call with a question. Refer to comment log.

Refer to meeting minutes for August 28, 2008.

ACEC Comments: (Use as much space as necessary.)

Refer to comment log. Tyler had one comment.

Refer to meeting minutes for August 28, 2008.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Refer comment form and meeting minutes for August 28, 2008.

Construction Engineers

Refer to comment log.

Contractors (Any additional contacts beyond “C” above.)

See above.

Suppliers

N/A

Consultants (as required) (Any additional contacts beyond “C” above.)

See above.

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Refer to comment log.

Others (as appropriate)

Andrew Cushing, UDOT Legal Counsel. Robert Miles and Barry Axelrod met (September 30, 2008) with Andrew to discuss the wording of the Supplemental Specification and UDOT policy. The main discussion centered on “project deliverables” and alternate wording. The decision was “physical features within the project limits.” He was comfortable with the rest of the items.

E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)

1. Minimum Sampling and Testing Requirements

Not applicable.

2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)

Not applicable.

3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

Normal notification of Standards updates to be posted on the Standards Web site and notice sent to the Standards listserver group. Updates will be provided by the UDOT Engineer for Construction at the first AGC/UDOT meeting and the Director of Engineering Services at the first ACEC meeting following publication.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

Not applicable.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

Not applicable.

3. Life cycle cost.

Not applicable.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.) (If no costs, what is the benefit of making this change?)

Project standardization, elimination of confusion/conflict with Consultant contracts, and elimination of possible distractions to the driving public when driving through a work zone. While it may not be measurable, any elimination of a distraction has a positive impact on safety.

H. Safety Impacts?

See Item G.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

A new policy, 08-6 (Use of Corporate Logos or Branding) is also being written and coordinated. Policy approval will be through Technical Committee.

Refer to meeting minutes for August 28, 2008.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

- | | |
|------------|---|
| Priority 1 | Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised. |
| Priority 2 | Upon posting, this impacts projects being advertised. |
| Priority 3 | Upon posting, the approved standard takes effect four weeks later for projects being advertised. |

| | | | | |
|---------------------|--|--------------|----------------------|---|
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 1 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

Review Comments Form

Refer to last page of these comments for updates since August 13 meeting.

| Item No. | Reviewer | Sheet/Section No. | Comment | Review Mtg. Action | Final Action. |
|----------|--------------------|-------------------|--|--------------------|---------------|
| 1a | Anne Ogden (email) | 00727M and 08-6 | IM. Will review. In both the Policy and Supplemental, the word "identification" could be added after "branding." This wording makes more sense to me and it helps the new documents be more consistent with the existing Memorandum. | | |
| | | | Response: This has been added. One place in the supp and three in the policy to include the title. | | Added. |
| 1b | Anne Ogden (email) | 00727M and 08-6 | In the Supplemental, the word "consultant" should be added to be consistent with the Policy & Memorandum wording. | | |
| | | | Response: Added, but then after discussion with Robert Miles removed the added wording. Specifications are written to the contractor so adding "consultant" to a specification has no binding impact. | | Rejected. |
| 1c | Anne Ogden (email) | 00727M | In the Supplemental, is the wording "prior written approval of the Engineer" correct? It reads a little weird to me, but I can see how it could work. Could "of" be changed to "from" and have it still be correct? | | |
| | | | Response: The current spec book uses from, of, and by as well as other combinations. I'm good with it as is. Later update, the wording addressing prior written approval was removed as no longer being an option. | | Updated. |
| 1d | Anne Ogden (email) | 08-6 | In the Policy, it's not defined WHO can give the "Department" written approval. The Supplemental says the Engineer gives approval to the contractor, but the Policy should define who in UDOT can give the Engineer the approval to do so. | | |
| | | | Response: The wording for approval was removed from the change. | | Updated. |
| 1e | Anne Ogden (email) | 08-6 | In the Policy, nothing is defined as to when or why approval would ever be given. Should that be defined in the Policy? | | |
| | | | Response: The wording for approval was removed from the change. | | Updated. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--|--------------|----------------------|---|
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 2 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

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|----|-----------------------|--------------------|---|--|------|
| 1f | Anne Ogden (email) | 00727M and 08-6 | Does "Consultant and Corporate logos or branding identification" refer to only private-sector companies? If so, is that intuitive or easily inferred? Does it need to be defined further? | | |
| | | | Response: Asked Anne if there is any other option. She said that answered her question. | | None |

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|----|-----------------------|--|---|--|--|
| 1g | Anne Ogden (email) | Consultant Services Memo (a reference item only in the package) | <p>The list at the end of the Memorandum is confusing to me. Are those places/documents where logos can't be used? The title of the list doesn't really explain WHAT the list is. Also, does this list need to be included in the Policy, or does the phrase "any project deliverable" make that unnecessary?</p> <p>Second update from Anne following Gaye's reply. After reading the memo and reading the list, I had pretty much assumed/inferred that it was a list of project deliverables on which logos or branding identifications could not be displayed. I made the comment listed below because the title of the list ("Restrictions on Consultant/Contractor Logos or Branding"), in my opinion, is slightly confusing. To me, it doesn't clearly define the items as "project deliverables" on which logos are not allowed, although I realize that was the intent of including the list. Also, based on your comment that some consultants may not consider some of those items to be "project deliverables", I still wonder if all or part of the list should be included in the policy and/or supplemental to define that these items are, in fact, considered to be some types of "project deliverables" to which the restrictions apply.</p> | | |
|----|-----------------------|--|---|--|--|

| Action Code | A | B | C | D |
|-------------|--------------------------|--------------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
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| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 3 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

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|--|--|--|--|--|--|
| | | | <p>Response: Updating the memo is not part of the proposed change for a Supplemental Specification and new policy. Contact has been made with Gaye Hettrick for consideration and possible update of the memo. Gaye sent the following to Anne in response. "On the Consultant Services memo we list out the items where we restrict use of the logo because some consultants may not consider some of the items "project deliverables". In addition, consultants may still, in text form, identify in appropriate places in a project deliverable document who produced the document." Verbally Gaye indicated they were not planning on updating the memo.</p> <p>Response to second comment: With the updated changes to the specification and policy I think that we are good to go. I think I see the point that Anne is commenting on, but to date it has not proven to be a concern with consultants.</p> | | <p>Consultant Services item.</p> <p>None</p> |
|--|--|--|--|--|--|

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|---|------------------------|--|--|--|-------|
| 2 | Anthony Sarhan (email) | | <p>Left phone message 8/6. We have reviewed the submittal and concur with the draft as submitted.</p> <p>Response: No action required.</p> | | None. |
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| 3 | Betty Purdie (email) | | <p>On vacation when follow up done. See comments from Ken Talbot, item 15 below.</p> <p>Response: No action required.</p> | | None. |
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|---|------------------------|--------|---|--|-------|
| 4 | Brad Humphreys (email) | 00727M | <p>Left phone message 8/5. From the information that was sent I did not see any benefit in changing the current standard. To assume that it is a distraction therefore a safety issue is not backed up with any data. I think if safety is the concern we should have some way to quantify the benefit. To define or limit the use of logos on construction projects may be prudent and necessary in order to eliminate confusion. On the other hand if the public knows who is constructing the project it may encourage the contractor to increase their focus on quality. Some more discussion on this may be warranted.</p> <p>Response: No update made or rejected as yet. If addressed or questioned in the Standards Committee meeting we will update as needed.</p> | | Open. |
|---|------------------------|--------|---|--|-------|

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|---|----------------------------|--|---|--|-------|
| 5 | Brent Schvaneveldt (email) | | <p>No comment reply by e-mail.</p> <p>Response: No action required.</p> | | None. |
|---|----------------------------|--|---|--|-------|

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|---|-----------------------|-----------------|--|--|--|
| 6 | Darin Duersch (email) | 00727M and 08-6 | Talked. Will review. Phone reply. He said this is a great idea and that this will help bring the situation back under control. | | |
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| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
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| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 4 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

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|--|--|--|--|--|-------|
| | | | Response: Followed up by phone but no comment received. Followed up to that with an email. Robert called to get a reply. No action required. | | None. |
|--|--|--|--|--|-------|

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|---|----------------------|--|--|--|-------|
| 7 | Doug Bassett (email) | | Left phone message 8/5. I have no comments on any of the documents | | |
| | | | Response: No action required. | | None. |

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|---|-----------------------|-----------------|--|--|----------|
| 8 | Fred Doehring (email) | 00727M and 08-6 | Left phone message 8/5 and follow up email 8/6. This is a step in the right direction but I'm not sure it will achieve what we are after. On I-80 the contractors attached banners to the first bridge that we moved. They were then directed that they couldn't attach them to our bridge (the final deliverable) so they attached the banners to the chains that were holding the bridge onto the SPMT. This actually was a worse situation because it blocked our view under the bridge. Perhaps we need a second paragraph that states something to the effect that the contractor may only have permanently attached identification on their vehicles and equipment. This would still allow them to paint their trucks, etc. but wouldn't allow banners. | | |
| | | | Response: Robert Miles discussed with Ken Connaughton and Carlos Bracerias. Wording "Logos or branding identification on contractor owned vehicles, equipment, and apparel not prohibited" added to policy and specification draft. | | Updated. |

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|---|-----------------------|-----------------|---|--|-------|
| 9 | Gaye Hettrick (email) | 00727M and 08-6 | I would comment that nothing has changed for consultants. This is directed at contractors. The memo online worked for consultants. A memo is insufficient to enforce it with contractors. That's why it was decided to put it in the specs. | | |
| | | | Response: No action required. | | None. |

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|----|-----------------------|--|--|--|-------|
| 10 | Glenn Schulte (email) | | Talked. Will review. Didn't think it was related to his area and to check with Eric Cheng. Still was going to review and provide comments. No comments received. | | |
| | | | Response: No action required. | | None. |

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|----|---------------------|-----------------|---|--|----------|
| 11 | Greg Searle (email) | 00727M and 08-6 | Left phone message 8/5. Greg provided one comment based on the input from Fred Doehring. In Supplemental Specification 00727M Greg suggested adding the phrase "or within the limits of the project except on contractor owned vehicles, equipment, and personnel" between "project deliverable" and "without prior." | | |
| | | | Response: Refer to response for item 8. | | Updated. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--|--------------|----------------------|---|
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 5 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

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|----|-----------------------|-----------------|---|--|----------|
| 12 | Jim McConnell (email) | 00727M and 08-6 | Left phone message 8/5. Looks good to me. I would assume that this wouldn't pertain to the contractors name/logo on their owned equipment such as a crane boom or something similar. | | |
| | | | Response: No action required. Advised Jim that his assumption is correct. Trucks and other vehicles have company info on them so that is not a problem. Based on additional comments this was addressed in both the specification and policy. | | Updated. |

| | | | | | |
|----|----------------------|--|--|--|-------|
| 13 | John Leonard (email) | | Talked. Will review. No comments received after follow up. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|-----------------------|--|---|--|-------|
| 14 | Kelly Barrett (email) | | Talked. Will review. Followed up on 8/7 with email. Opened but still no response. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|--|-----------------|---|--|----------|
| 15 | Ken Talbot (email. Instant Message follow up.) | 00727M and 08-6 | Contact by IM. Ken said he had talked to Betty Purdie about it and she did say she had some concerns that the language in there would restrict contractors from placing their logos on their equipment and traffic control items and things like that, which didn't seem to be the intent of the policy. He said she is on vacation now. I think the wording should be adjusted so that the requirement is not so stringent. But there is already language in there that allows for the Engineer to approve it, but it is just another hoop to jump through. I assume that the policy is because of the large banners that were hanging from the bridge moves on 4500 south and such. Maybe the language should be more specific toward that. | | |
| | | | Response: Refer to response for item 1d and 8 above. | | Updated. |

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|----|-----------------------|--|--|--|-------|
| 16 | Kris Peterson (email) | | Left phone message 8/5. Sent email follow up 8/7. Robert talked to Kris and got verbal confirmation that he is okay with the proposed changes. | | |
| | | | Response: Talked to Kris on 8/11. He is working on a response. Asked him to coordinate with Pete Negus and Stan Adams. He advised Stan is on vacation. Robert updated Kris on the modifications based on approval and vehicle, equipment, and apparel use. No action required. | | None. |

| | | | | | |
|----|---------------------|--|--|--|-------|
| 17 | Lisa Wilson (email) | | I have reviewed this information and I don't see any issues with it. | | |
| | | | Response: No action required. | | None. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--|--------------|----------------------|---|
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 6 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

| | | | | | |
|----|----------------------|--|---|--|-------|
| 18 | Mike Donovan (email) | | Did not call. Glenn is reviewing and indicated not their area. John Leonard said not part of the logo program they are responsible for so he will review. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|-----|--------------------|-----------------|--|--|----------|
| 19a | Mike Miles (email) | 00727M and 08-6 | What would be the reason an engineer would approve the placement of a logo on a deliverable? | | |
| | | | Response: From Robert Miles - This was included to give our crews the opportunity to include plaques that commemorate partnering efforts if we want to. Point being that it would be our decision when, where and what. E-mail response sent to Mike by Robert. Following review of other comments the requirement for approval was removed from the policy and specification. | | Updated. |

| | | | | | |
|-----|--------------------|-----------------|--|--|-------|
| 19b | Mike Miles (email) | 00727M and 08-6 | It sounds like this change is catered to construction. Is it? or does it still apply to the design deliverables as well? | | |
| | | | Response: From Robert Miles - This is completely catered to construction. Preconstruction activities are already covered buy an existing memo. E-mail response sent to Mike by Robert. | | None. |

| | | | | | |
|-----|--------------------|-----------------|--|--|-------|
| 19c | Mike Miles (email) | 00727M and 08-6 | Can I now approve the use of a logo on a design package? or individual design sheets? | | |
| | | | Response: From Robert Miles - No. Please see previous question and memo from Gaye Hettrick on consultant services website. E-mail response sent to Mike by Robert. | | None. |

| | | | | | |
|-----|--------------------|-----------------|---|--|----------|
| 19d | Mike Miles (email) | 00727M and 08-6 | Why do we need this spec anyway? If we hired someone to do a job for us, why not let them say that they did the work? | | |
| | | | Response: From Robert Miles - There are a couple of concerns. We have concern about providing free advertisement to contractors. There is a concern about safety, and not wanting to provide any additional distractions to motorists. With the aggressive schedules we consistently run we have heard of contractors claiming to own products that are not finished. We definitely don't want people to hang signs with messages we don' agree with. E-mail response sent to Mike by Robert. | | Updated. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
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| | | | | | |
|----|-----------------------------------|--------------------|---|--|-------|
| 20 | Mont Wilson (email. Phone.) | 00727M and 08-6 | Followed up by phone. He said he sent it out by had not heard anything back yet. Will bring it up at a meeting later today (8/5) and advise if there are any comments. If no contact back I can assume they are good with the change. Called with question (8/6). Can logos be used on Design - Bid submittals? | | |
| | | | Response: Don't see a problem with that. It is the same as a Consultant RFP/RFQ submittal. The submittal is spot lighting the company in for to get a contract. Following the discussion Mont indicated they were fine with the recommendation. | | None. |

| | | | | | |
|----|-----------------------|--|---|--|-------|
| 21 | Pete Negus (email) | | Left phone message 8/5. Sent email follow up 8/7. | | |
| | | | Response: See item 16 response above. | | None. |

| | | | | | |
|----|--|--|--|--|-------|
| 22 | Rex Harris (email. Instant Message follow up.) | | I believe the Spec and Policy are ok as written. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|---------------------------|--|-------------------------------|--|-------|
| 23 | Richard Clarke (email) | | No problem with any of these. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|---------------------------|--------------------|---|--|----------|
| 24 | Richard Miller (email) | 00727M and 08-6 | Left phone message 8/5. In the Policy it states: "without prior Department written approval" and the Special Provision states: "without prior written approval of the Engineer". These could be two different individuals (Department-Assistant Director and Engineer-Resident Engineer). Is there any instance where the Engineer would give approval? I would suggest a period after deliverable and delete the rest of the sentence. | | |
| | | | Response: This suggested change was incorporated. | | Updated. |

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|----|----------------------|--|--|--|-------|
| 25 | Rob Wight (email) | | Left phone message 8/5. Replied with no comment. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|--------------------------|--|---|--|-------|
| 26 | Robert Dowell (email) | | Left phone message 8/5. I have no comments. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|----------------------------|--|-------------------------------|--|-------|
| 27 | Robert Westover (email) | | No comment reply by e-mail. | | |
| | | | Response: No action required. | | None. |

| | | | | | |
|----|-------------------------|--|---|--|-------|
| 28 | Scott Andrus (email) | | No problems with the proposed modification or policy. | | |
| | | | Response: No action required. | | None. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--|--------------|----------------------|---|
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 8 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

| | | | | |
|----|-----------------------|--|--|-------|
| 29 | Stan Adams (email) | Left phone message 8/5. Sent email follow up 8/7. | | |
| | | Response: See item 16 response above. On vacation. | | None. |

| | | | | |
|----|---|--|--|-------|
| 30 | Steve Ogden (email. Instant Message follow up.) | Contacted by IM. Steve said the policy and spec seem reasonable to me. | | |
| | | Response: No action required. | | None. |

| | | | | | |
|-----|------------------------------|------|---|--|----------|
| 31a | Troy Torgersen (email) | 08-6 | Left phone message 8/5. Policy 08-6. The purpose discusses establishing guidance and requirements for addressing etc. but in the Policy it is very brief. They don't match. I would expect to see more information related to how a consultant goes about requesting the branding of the project. Who is responsible for the review and processing of the request? More information is needed to help the Regions address requests. | | |
| | | | Response: The requirement for approval was removed from the change. | | Updated. |

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|-----|------------------------------|--------------------|---|--|----------|
| 31b | Troy Torgersen (email) | 00727M and 08-6 | Left phone message 8/5. The supplemental specification requires the "Engineer" to give written approval while the Policy only indicates the Department. Shouldn't they be the same? | | |
| | | | Response: Refer to 1d above from Anne Ogden. | | Updated. |

| | | | | | |
|----|---|--------------------|--|--|-------|
| 32 | Tyler Yorgason (email. Phone.) | 00727M and 08-6 | Followed up by phone. He said he was going to send an email later in the day, but we discussed it on the phone. He had someone ask if the direction was going to be that any pictures or related information on bridges and roadways for use in company promotional material would be prohibited in the future. To clarify it would be after project completion type advertising material. | | |
| | | | Response: Advised Tyler that didn't seem to be the intent to prohibit showcasing a project in company literature. If this is not the case additional follow up would be done and he would be advised. | | None. |

| | | | | | |
|----|--|--|-------------------------------|--|-------|
| 33 | Eric Cheng (added late) (email.) | | Seems ok to me. | | |
| | | | Response: No action required. | | None. |

| Action Code | A | B | C | D |
|-------------|--------------------------|--------------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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|---|-------------------------------------|-----------------|---------------|---|
| Standard Drawing/Specification Review Sheet | | Review Comments | | |
| Std Dwg/Spec Number | 00727M and Policy 08-6 | Sheet 9 | of | 9 |
| Date: | August 13, 2008 and October 9, 2008 | Facilitator: | Barry Axelrod | |

Added for October 30, 2008 meeting

| | | | | | |
|----|----------------|-----------------|---|--|----------|
| 34 | Andrew Cushing | 00727M and 08-6 | Andrew Cushing, UDOT Legal Counsel. Robert Miles and Barry Axelrod met (September 30, 2008) with Andrew to discuss the wording of the Supplemental Specification and UDOT policy. The main discussion centered on “project deliverables” and alternate wording. The decision was “physical features within the project limits.” He was comfortable with the rest of the items. | | |
| | | | Response: Policy and Supplemental Specification updates. | | Updated. |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |



MEMORANDUM

TO: Consultants/Contractors

FROM: Gaye Hettrick, UDOT Consultant Services Manager

DATE: July 19, 2006

SUBJECT: **USE OF CONSULTANT AND/OR CORPORATE LOGOS OR BRANDING IDENTIFICATION IN UDOT OWNED DOCUMENTS OR PRODUCTS FOR ANY PUBLIC PURPOSE**

Consultant and/or Corporate logos or branding identification may no longer be displayed in public documents/products produced for UDOT beginning July 1, 2005. It is our intent that consultants should place identifying information, in text format, in appropriate places in documents. For specific questions or further guidance please contact Gaye Hettrick, Consultant Services Manager, (801) 965-4639 or ghettrick@utah.gov.

Restrictions on Consultant/Contractor Logos or Branding

- Plan Sheets or Title Blocks.
- Environmental Documents.
- Standard UDOT Forms.
- Project Websites.
- Cover Pages.
- Headers/Footers.
- Information and Display Boards for Public Meetings.

**Supplemental Specification
2008 Standard Specification Book**

SECTION 00727M

CONTROL OF WORK

Add the following to Part 1, Article 1.10:

- E. Do not use or attach permanent or temporary contractor logos or branding identification on any **physical features within the project limits**.
 - 1. Logos or branding identification other than those permanently attached to vehicles, equipment, and apparel are prohibited.

Use of Corporate Logos or Branding Identification

Effective: October 30, 2008

UDOT 08-6

Revised: new

Purpose

Prohibit the use of corporate logos or branding identification on Utah Department of Transportation (UDOT) owned structures, facilities, documents, or products for any public purpose.

Policy

Consultant or Contractor logos or branding identification will not be used on any project deliverable **or project physical feature within the project limits.**

Logos or branding identification other than those permanently attached to vehicles, equipment, and apparel are prohibited.

Standards Committee Submittal Sheet

Name of preparer: John Butterfield

Title/Position of preparer: Region 2 Materials Engineer

Specification/Drawing/Item Title: Portland Cement Concrete

Specification/Drawing Number: 03055

Enter appropriate priority level:

(See last page for explanation) 3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

- Supplemental Specification 03055 was reviewed by the UDOT Standards Committee on August 28. Subsequent to that review, some sections of the supplemental were modified. Please note specifically section 3.3 - Mix design changes to use of fly ash and mitigation of ASR. Also references to self-consolidating concrete have been removed. This supplemental is again being submitted to address those changes.

The following changes were addressed in the August Meeting:

- Clarifications of mix design submittal and approval process, including quality assurance requirements for testing personnel and laboratories.
- Corrections of typographical errors, grammatical errors, and incorrect table references.
- Addition of hot and cold weather limitations inadvertently left out of the 2008 standard. The added limitations are similar limitations already specified in the 2008 standard 02752 PCC Pavements, but necessary in 03055 to cover itmes other than pavements.

B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Existing.

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

Existing – in accordance with the Minimum Sampling and Testing Requirements

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

See Comments form. Comments addressed in August meeting.

ACEC Comments: (Use as much space as necessary.)

See Comments Form. Additional comments submitted and addressed in items 18 and 19 of the comments form.

- D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Notified – no additional comments

Contractors (Any additional contacts beyond “C” above.)

Notified – no additional comments

Suppliers

Notified – no additional comments

Consultants (as required) (Any additional contacts beyond “C” above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

See Comments. Notified. No additional comments

Others (as appropriate)

- E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)

1. Minimum Sampling and Testing Requirements

Not impacted

2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)

Not impacted

3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

All interested parties (AGC, RME's, Construction, Pavement Council) will be contacted upon approval.

- F. Costs? (Estimates are acceptable.)
1. Additional costs to average bid item price.

None.
 2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
 3. Life cycle cost.
- G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.) (If no costs, what is the benefit of making this change?)
- Benefits of the change are to clarify the language of the specification and to address issues such as extreme weather conditions that were not previously included.
- H. Safety Impacts?
- None.
- I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.
- Previous version was approved for the 2008 Standard Specifications. This supplemental clarifies language, corrects references and grammar, and adds hot/cold weather limitations inadvertently excluded from the 2008 standard but drawn from standard 02752 which was approved in the 2008 Standard Specifications.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

- | | |
|------------|---|
| Priority 1 | Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised. |
| Priority 2 | Upon posting, this impacts projects being advertised. |
| Priority 3 | Upon posting, the approved standard takes effect four weeks later for projects being advertised. |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|-------------------------|---|
| Std Dwg/Spec Number | 03055 | Sheet 1 | of | 4 |
| Date: | 10/09/08 | Facilitator: | John Butterfield | |

Review Comments Form

| Item No. | Reviewer | Sheet/Section No. | Comment | Review Mtg. Action | Final Action. |
|----------|--|-------------------|---|--------------------|---------------|
| 1 | Tyler Yorgason ACEC | 3.4 D and E | The Standards Committee Submittal Sheet noted that one of the changes was to add hot and cold weather limitations, similar to those found in the 02752 PCCP specification. While, there could be specific reasons I am unaware of to have them in both places, it may be preferable to not only make the proposed change to the 03055 spec. but to also remove the duplicate limitations from the 02752 spec. This would eliminate the need to maintain the same information in different specifications and leave only limitations specific to PCCP in the 02752 spec. | | |
| | | | There was also one other little detail in the 03055 Supplemental you have probably already corrected - the date in the footer has a stray "6" in it. | | |
| | | | Response: Hot and cold weather limitations most appropriately belong in 03055 as added. Needed here to cover all items, curb and gutter, etc. Will review limitations as currently included in 02752. | | |
| | | | Footer was corrected. | | |
| 2 | Nick Peterson UDOT Field Engineer | 1.5.A.1 | 1.5.A.1. has been confusing to our contractors. They think that breaks within the year should be all they need to verify strengths. However, we are requiring new trial batches each year. The spec. to me seems like it states that they should be able to use past history within the year. Am I reading this incorrectly. Should we modify to make it more clear? | | |
| | | | Response: Mix designs will be approved based on results of trial batches or on <u>history from a UDOT project within the last year.</u> | | |
| 3 | Todd Laker, Holcim | 2.2 C2 | As we discussed on the phone this morning, I would suggest deleting the change made to section 2.2 Cement, C. 2. The original language clearly states that 30 percent pozzolan shall not be exceeded and that pozzolan from a blended cement and pozzolan added to a blended cement are to be considered the total pozzolan percentage. The proposed change may cause confusion in regard to the addition of flyash in concrete mixtures utilizing blended cements. | | |
| | | | Response: Intent of the new language was the same. Language returned to original. | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | | |
|---------------------|-----------------|--------------|-------------------------|----|---|
| Std Dwg/Spec Number | 03055 | Sheet | 2 | of | 4 |
| Date: | 10/09/08 | Facilitator: | John Butterfield | | |

| | | | | | |
|---|---------------------------------------|--|---|--|--|
| 4 | Doug Akin, Anthony Sarhan, FHWA | | 1) 1.5.A.1 - Suggest clarifying as "calendar year" 2) 1.5.A.2 - Are the 2nd and 3rd sentences necessary, or do they belong in this section? 3) 1.5.A.3 - What about ACI certification? 4) Table 1 - 5th column references "Article G". Should be Article H 5) 2.2.A - Why the use of ASTM C 150 instead of AASHTO M85? 6) 2.2.F - Different is capitalized 7) 3.4.A - What about placement when air temperature is over 90 F. 8) 3.4.E - What is definition of Hot Weather for the purposes of this article? | | |
| | | | Response: 1) Year and "calendar year" are the same thing. 2) Language is necessary to eliminate confusion. Recommend text remains. 3) ACI qualification does not stand alone. A crossover qualification is allowed with ACI, but it requires submittal of proof of qualification after which TTQP qualifications are issued. 4) Corrected. 5) Cement producers provide product according to C150. Differences in the specs exist. 6) Corrected. 7) 3.4.A discusses timing of placement. Changed language to read "60 minute placement above 85 °F" 8) ACI 305 1.2 defines hot weather, but for the purposes of this specification, the references to hot weather conditions and the remedies are specific and need not be further defined. | | |

| | | | | | |
|---|---|--|---|--|--|
| 5 | Scott Nussbaum, Region 1 Materials Engineer | | 1.5 B, C, and D reference the wrong sections in the same specification. Instead of 2.2, 2.1, and 2.5, it should be 2.3, 2.1, and 2.6. | | |
| | | | Response: Corrected | | |

| | | | | | |
|---|-----------|--|--|--|--|
| 6 | Larry Gay | | I concur with all changes and upgrades | | |
| | | | Response: No change | | |

| | | | | | |
|---|-------------|--|----------------------------|--|--|
| 7 | Larry Myers | | No concerns. | | |
| | | | Response: No Change | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|-------------------------|---|
| Std Dwg/Spec Number | 03055 | Sheet 3 | of | 4 |
| Date: | 10/09/08 | Facilitator: | John Butterfield | |

| | | | | | |
|----|----------------------------------|---------------|---|--|--|
| 8 | Fred Doehring, Structures | | I have no concerns at this time. Response: No Change | | |
| 9 | Mont Wilson, AGC | | No concerns. Response: No Change | | |
| 10 | Kris Peterson, UDOT Construction | 1.5 A | Suggest adding : "Furnish to the Resident Engineer and <i>forward to</i> the Region Materials Engineer. " Important to have just one point of acceptance. Response: Due to resident engineers' frequent inexperience with mix designs, it is critical that the RME's review the design before the RE accepts. Believe new language establishes that. | | |
| 11 | Clark Mackay | Full Document | Numerous grammatical corrections Response: Corrected as appropriate | | |
| 12 | James Cox R3 Materials Engineer | Full Document | No Concerns Response: No change | | |
| 13 | Jerry Hall Geneva Rock | Full Document | Email and Phone contacts Response: No response | | |
| 14 | Doug Johnson Ashgrove | Full Document | Contacted – No concerns at this time. Response: No change | | |
| 15 | Ben Blakenship Ashgrove Cement | Full Document | Contacted – No concerns at this time. Response: No Change | | |
| 16 | Barry Sharp Research | Full Document | Contacted – No concerns at this time. Response: No change | | |
| 17 | Deryl Meyhew Resident Engineer | Full Document | Contacted – No concerns at this time. Response: No Change | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

| Standard Drawing/Specification Review Sheet | | Review Comments | | |
|---|-----------------|-----------------|-------------------------|---|
| Std Dwg/Spec Number | 03055 | Sheet 4 | of | 4 |
| Date: | 10/09/08 | Facilitator: | John Butterfield | |

| | | | | | |
|----|--------------------|------------------|---|--|--|
| 18 | Tyler Yourgason | Full Document | Contacted – My only comment is on the cold weather section on page 10. In item number 9 it says to cease operations when the ambient temperature is 45 degrees Fahrenheit and decreasing. I think that it should have room to take measures to heat etc. to keep the ambient temperature around the pour 45 degrees and above. If not how much concrete would be poured around here in the winter time. | | |
| | | | Response: No Change – Spec requires submittal of a cold weather plan, which should address measures taken to keep ambient temperature at 45 degrees and above. | | |

| | | | | | |
|----|---------------------------|------------------|---|--|--|
| 19 | Daniel C. Noziska P.E. | Full Document | Contacted – Not sure what the UDOT QMP for RMC says (referred to in 1.5.C), but it would be best to state in spec performance criteria. | | |
| | | | Also the Fritz pack (on site air) is not a good practice and the spec is vague on what conditions it is allowed.. Response: No change – Spec was intentionally left open-ended to allow multiple options for ASR testing. Response: On-site air: No change – Spec limits site-added air to one addition per load regardless of quantity. | | |

| Action Code | A | B | C | D |
|-------------|--------------------------|--------------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Supplemental Specification
2008 Standard Specification Book

SECTION 03055

PORTLAND CEMENT CONCRETE

Delete Section 03055 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Materials and procedures for producing Portland cement concrete.

1.2 RELATED SECTIONS Not Used

1.3 REFERENCES

- A. AASHTO M 6: Standard Specification for Fine Aggregate for Portland Cement Concrete
- B. AASHTO M 80: Standard Specification for Coarse Aggregate for Portland Cement Concrete
- C. AASHTO M 154: Standard Specification for Air-Entraining Admixtures for Concrete
- D. AASHTO M 157: Standard Specification for Ready-Mixed Concrete
- E. AASHTO M 194: Standard Specification for Chemical Admixtures for Concrete
- F. AASHTO M 295: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- G. AASHTO T 325: Estimating the Strength of Concrete in Transportation Construction by the Maturity Tests
- GH. ASTM C 150: Standard Specification for Portland Cement
- IH. ASTM C 595: Standard Specification for Blended Hydraulic Cements
- JL. ASTM C 1157: Standard Performance Specification for Hydraulic Cement

- KJ. ASTM C 1240: Standard Specification for Silica Fume for Used in Cementitious Mixtures
- LK. ASTM C 1567: Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
- ML. ASTM C 1602: Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
- NM. American Concrete Institute (ACI) Standards
- ON. Precast/Prestressed Concrete Institute (PCI)
- PQ. UDOT Materials Manual of Instruction
- QP. UDOT Minimum Sampling and Testing Requirements Manual
- RQ. UDOT Quality Management Plan

1.4 DEFINITIONS Not Used

1.5 SUBMITTALS

- A. Furnish to the Resident Engineer and Region Materials Engineer a mix design for each class of concrete to be used.
 - 1. Mix designs will be approved based on results of trial batches or on history from UDOT project(s) within the last year. Base concrete mix designs for all "A" concrete classes on trial batch test results or on UDOT's past project history using the same materials used in previous mix designs within the past year.
 - 2. Use the same components in the trial batches that are to be used in the project. Accelerators and site-added air-entrainment can be incorporated in the trial batch but are not required. The Contractor assumes responsibility for the compatibility of these all admixtures with the mix design and their potential effects on concrete properties, including coarse and fine aggregate, water, source and type of cement, air-entraining agent, fly ash, etc., including any site-added admixtures intended to be used.
 - 3. Do not exceed 30 percent total pozzolan in any mix unless otherwise specified. Personnel performing and witnessing trial batches, and performing compressive and flexural strength testing, must be UDOT TTQP Concrete and Concrete Strength Testing qualified.
 - 4. The Department or its representative may witness the trial batch.

5. Mix concrete trial batches as specified in UDOT Materials Manual of Instruction Part 8-974: Guidelines for Portland Cement Concrete Mix Design.
 6. Compressive and flexural strength testing for verification of trial batches will be performed by an AASHTO accredited laboratory, approved through the UDOT Laboratory Qualification Program.
 6. ~~Meet the following additional requirements for Self Consolidating Mixes (SCC):~~
 - a. ~~Design and mix according to ACI Manual of Concrete Practice 301: Specifications for Concrete.~~
 - b. ~~Provide mix specific flow and spread criteria.~~
 - c. ~~Meet PCI — TR-6-03. A visual stability index rating of 0 — 1 is required.~~
 - d. ~~Provide compressive strength data.~~
 - e. ~~Include documentation justifying any deviation from the aggregate operating bands required by Table 4 with the mix design for approval. Production may not begin until the deviation is approved.~~
- B. Provide tTest results verifying the coarse and fine aggregate used meets this section, article 2.3
- C. For any proposed mix design, provide test results for potential reactivity of coarse and fine aggregates in accordance with the requirements of the UDOT Quality Management Plan for Ready-Mix Concrete
- D. When using potentially reactive aggregates in a mix design, provide results from appropriate testing to determine the ability of the combinations of cementitious materials and aggregates to control the reactivity2
- EG. Submit vVerification that cement used is from a pre-qualified supplier. See this Section, article 2.24, paragraph E.
- FD. Submit vVerification that fly ash or other pozzolan used is sn from a pre-qualified supplier. See this Section, article 2.65, paragraph A.1.d.
- G. ~~E.~~ Submit vVerification that the batch plant meets the requirements of the UDOT Quality Management Plan for Ready-Mix Concrete.
- H. ~~Submit cold and/or hot weather plans as required in Article 3.4.~~
Limitations.

1.6 ACCEPTANCE

- A. Acceptance is in accordance with UDOT Minimum Sampling and Testing Requirements.
- B. When concrete is below specified strength and does not have a separate strength pay factor:
 1. Department may accept item at a reduced price.
 2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below a specified strength.
 3. Department will calculate the pay factor as follows based on 28 day compressive strength:

| Psi below specified strength: | Pay Factor: |
|--------------------------------------|--|
| 1 – 100 | 0.95 |
| 101 – 200 | 0.90 |
| 201 – 300 | 0.85 |
| 301 – 400 | 0.80 |
| More than 400 | 0.50 or Engineer may R reject |
 4. The Engineer may accept a “reject” lot based on an engineering analysis and concurrence from the Region Materials Engineer. If a reject lot is allowed to remain in-place, apply a pay factor of 0.50.

PART 2 PRODUCTS

2.1 CONCRETE CLASSES AND MIX REQUIREMENTS

- A. Meet the requirements in Table 1.

Table 1

| Concrete Classes and Mix Requirements | | | | | | | |
|---------------------------------------|--------------------------------|-------------------------------|---|---|--------------------------------------|--|--|
| Class | Coarse Aggregate or Sieve Size | Max. Water/Cementitious Ratio | Min. Cementitious Content (lb/yd ³) | Slump (Inch) See Article G H for further Criteria | Air Content Percent (%) [*] | Mix Design Compress f F _{cr} (Psi) | 28 Day Minimum Compress f c (Psi) ^{**} |
| AA(AE) | 2" to No. 4 | 0.44 | 564 | 1 to 3.5 | 4.0 - 7.0 | 5200 | 4000 |
| | 1-1/2" to No. 4 | 0.44 | 564 | 1 to 3.5 | 4.5 - 7.5 | 5200 | 4000 |
| | 1" to No. 4 | 0.44 | 611 | 1 to 3.5 | 5.0 - 7.5 | 5200 | 4000 |
| | 3/4" to No. 4 | 0.44 | 611 | 1 to 3.5 | 5.0 - 7.5 | 5200 | 4000 |
| A(AE) | 1-1/2" to No. 4 | 0.53 | 470 | 1 to 3.5 | 4.5 - 7.5 | 3900 | 3000 |
| | 1" to No. 4 | 0.53 | 470 | 1 to 3.5 | 4.5 - 7.5 | 3900 | 3000 |
| | 3/4" to No. 4 | 0.48 | 517 | 1 to 3.5 | 4.5 - 7.5 | 3900 | 3000 |
| B or B(AE) | | 0.62 | 376 | 2 to 5 | -- 3.0 - 6.0 | 3250 | 2500 |

* Values listed represent in-place air content. Make necessary adjustments for impacts to air content due to placement.

** For ~~f~~f_c over 4000 psi, design and proportion mixes according to ACI Manual of Concrete Practice 301: Specifications for Concrete and project specific criteria.

B. Minimum strength is based on a coefficient of variation of 10 percent, and one test below the minimum strength per 100 tests.

C. Maximum nominal size of coarse aggregate:

1. Not larger than 1/5 ~~of~~ the narrowest dimension between sides of forms.
2. Not larger than 1/3 the depth of slabs.
3. Not larger than 3/4 ~~of~~ the minimum clear distance between reinforcing bars or between bars and forms, whichever is less.

D. Do not exceed water/cementitious ratio.

E. Calculate the water/cementitious ratio (w/c) according to the following formula:

$$\frac{W}{C} = \frac{\text{Water}}{\text{Cement} + \text{Pozzolan}}$$

F. Do not exceed 30 percent total pozzolan in any mix unless approved or otherwise specified.

- GF.** Use 94 lb ~~additional~~^{more} cementitious material per cubic yard when concrete is deposited in water than the design requires for concrete placed above water.
- HG.** Use Table ~~4-1~~ to determine the slump requirements when not using water-reducing admixtures ~~or viscosity modifying admixtures~~.
1. Slump requirements when using low range water reducers: 1 inch to 5 inches for all classes of concrete.
 2. Slump requirements when using high ~~r~~^Range water reducers: 4 inches to 9 inches for all classes of concrete.
 3. ~~Slump requirements when using viscosity modifying admixtures: None. Meet visual stability index of 0 – 1.~~

2.2 CEMENT

- A.** Use type II ~~P~~ortland cement or blended hydraulic cement unless otherwise specified. (ASTM C 150, ASTM C 595, ASTM C 1157)
- B.** Portland Cement
1. Follow Tables 1 and 3 in ASTM C 150.
 2. Follow the requirements of Table 2 of ASTM C 150 for low-alkali cement.
- C.** Blended Hydraulic Cement.
1. When blended hydraulic cement is substituted for ~~P~~ortland cement:
 - a. Use ASTM C 1567 to verify that expansion is less than 0.1 percent at 16 days.
 - b. Refer to the equivalent cements listed in Table 2.
 2. Do not exceed 30 percent total pozzolan limit when adding flyash to a blended hydraulic cement. ~~in a blended cement.~~
 - a. Submit documentation of the total pozzolan content with the mix design.

Table 2

| Portland Cement/Blended Hydraulic Cement Equivalencies | | |
|--|------------|-------------|
| ASTM C 150 (Low Alkali) | ASTM C 595 | ASTM C 1157 |
| Type I | IP | GU |
| Type II | IP (MS) | MS |
| Type III | - | HE |
| Type V | - | HS |

- D.** Do not use cement that contains lumps or is partially set.

- E. Use cement from the list of UDOT qualified suppliers list maintained by the UDOT Materials Quality Assurance Section.
- F. Do not mix cement^s originating from ~~Different~~different sources.
- G. Do not use air-entrained cement.
- H. Department will sample and test the cement in accordance with UDOT Quality Management Plan 502: Cement.

2.3 AGGREGATE

- A. Coarse Aggregate for Normal Concrete Mixes
 - 1. Use coarse aggregate meeting AASHTO M 80 physical properties. Use one of the gradations found in Table [32](#).
 - 2. Do not exceed 1 percent of deleterious substances as shown in AASHTO M 80, Table 2, for Class A aggregates. Material finer than No. 200 sieve: maximum allowable 1 percent, except~~ion~~^{ion} as noted in footnote d.

Table 3

| Aggregate Gradations - Percent Passing (by weight) | | | | | | | | |
|---|-----------|----------|-----------|----------|----------|----------|----------|--------------|
| Aggregate or Sieve Size (inches) | 2½ | 2 | 1½ | 1 | ¾ | ½ | ⅜ | No. 4 |
| 2 to No. 4 | 100 | 95-100 | | 35-70 | | 10-30 | | 0-5 |
| 1½ to No. 4 | | 100 | 95-100 | | 35-70 | | 10-30 | 0-5 |
| 1 to No. 4 | | | 100 | 95-100 | | 25-60 | | 0-10 |
| ¾ to No. 4 | | | | 100 | 90-100 | | 20-55 | 0-10 |

- B. Fine Aggregate for Normal Concrete Mixes
 - 1. Use fine aggregate meeting AASHTO M 6 physical properties. Use the gradation found in Table [43](#).
 - 2. Do not exceed 3.0 percent ~~of~~^{of} deleterious substances as outlined in AASHTO M 6, Table 2, for class A aggregates, using option “b” for material finer than the No. 200 sieve. Material finer than No. 200 sieve: maximum allowable 3 percent.

Table 4

| Gradation | |
|--------------------|------------------------------------|
| Sieve Size | Percent Passing (by weight) |
| $\frac{3}{8}$ inch | 100 |
| No. 4 | 95 to 100 |
| No. 16 | 45 to 80 |
| No. 50 | 10 to 30 |
| No. 100 | 2 to 10 |

~~C. Coarse and Fine Aggregate for Self Consolidating Concrete (SCC) Mixes.~~

- ~~1. Combined gradations of coarse and fine aggregates must be within the bands shown in Table 4. Establish targets and production tolerances necessary to meet the requirements of Table 45.~~

Table 5

| Aggregate Gradations (Percent Passing by Dry Weight of Aggregate) | | |
|--|--|--|
| Sieve Size | $\frac{3}{4}$ inch Operating Bands | $\frac{1}{2}$ inch Operating Bands |
| $\frac{3}{4}$ inch | 95—100 | — |
| $\frac{1}{2}$ inch | 65—95 | 95—100 |
| $\frac{3}{8}$ inch | 58—83 | 65—95 |
| No. 4 | 35—65 | 50—80 |
| No. 8 | 25—50 | 30—60 |
| No. 16 | 15—35 | 20—45 |
| No. 30 | 10—35 | 12—35 |
| No. 50 | 5—20 | 5—20 |
| No. 100 | 1—12 | 2—12 |
| No. 200 | 0—2 | 0—2 |

2.4 WATER

- A. Use potable water or water meeting ASTM C 1602, including Table 2.
- B. Screen out extraneous material when pumping water from streams, ponds, lakes, etc.

2.5 ADMIXTURES

- A. Air Entrainment: as specified. Meet AASHTO M 154, including Section 5.
- B. Water Reducing Agents: Meet AASHTO M 194.

1. High Range Water Reducer (HRWR): Submit a written plan for approval with the trial batch that shows proper attention will be given to ingredients, production methods, handling and placing.
 2. Do not use calcium chloride.
- C. Accelerators: Meet AASHTO M 194
1. Use non-chloride accelerators.
- D. Set Retarding Admixtures: Meet AASHTO M 194.
1. Establish the effective life of the set-retarding admixture by trial batch if set retarding admixtures are required due to haul times exceeding the time limitations in this Section, article 3.4, paragraph A.
 2. Do not exceed any manufacturer recommendations for the use of the set-retarding admixture.
 3. Do not re-dose the concrete with additional set retarding admixture.
 4. Add set-retarding admixture at the batch plant at the time of initial batching operations.
 5. Show on batch tickets the amount of admixture used.
 6. Time of placement is established by the trial batch and supersedes the requirements in this Section, article 3.4, paragraph A.

~~E. Viscosity Modifying Admixtures.~~

- ~~1. Do not exceed any manufacturer recommendations for the use of the viscosity modifying admixture.~~
- ~~2. Do not re-dose the concrete with additional viscosity modifying admixture.~~
- ~~3. Show on batch tickets the amount of admixture used.~~

EF. Site-added air-entrainment admixtures. (Meet AASHTO M 154)

1. Limit the use of site-added air-entraining agents to one addition (regardless of quantity) per load~~Use admixture in the trial batch.~~
2. Use pre-measured admixtures only.
3. Record amount used on batch ticket.
4. Rotate the drum at least 30 revolutions at the mixing speed recommended by the manufacturer.

2.6 POZZOLAN

- A. Fly Ash:
1. Class F, as specified. Conform to AASHTO M 295 except table 2.
- ~~a. Replace a minimum of 20 percent of the portland cement by weight unless otherwise specified. Use the minimum cement content in the design formulas before replacement is made.~~

- b. Loss on Ignition (LOI): not to exceed 3 percent.
 - c. Maximum allowable CaO content: not to exceed 15 percent.
 - d. Use fly ash from the list of UDOT pre-qualified sources maintained by the UDOT Materials Quality Assurance.
 - e. Label the storage silo for fly ash to distinguish it from cement.
 - f. Use different size unloading hoses and fittings for cement and fly ash.
- 2. Fly ash may be sampled and tested for compliance at any time.
- B. Natural Pozzolan (Class N)
 - 1. Conform to AASHTO M 295.
 - 2. May use instead of fly ash provided that the expansion, according to ASTM C 1567, does not exceed 0.1 percent.
- C. Silica Fume: Conform to ASTM C 1240.

PART 3 EXECUTION

3.1 PREPARATION

- A. Aggregate stockpiles:
 - 1. Construct stockpile platforms so that subgrades are prevented from intruding into aggregates.
 - 2. Build stockpiles at least two days before use.
 - 3. Provide an operator and front-end loader to help the Engineer take aggregate samples.
 - 4. Aggregate may not be accepted ~~in daily increments, but not~~ more than 30 days before use.
 - 5. Provide separate stockpiles for coarse and fine aggregates.
 - 6. Construct stockpiles to minimize segregation of aggregates.
 - 7. Allow washed aggregates to drain to uniform moisture content before use (12 hours minimum).

3.2 BATCH MATERIALS

- A. Meet AASHTO M 157.
- B. Hand Mixing:
 - 1. Only Class B concrete may be hand mixed.
 - 2. Hand-mixed batches cannot exceed 0.5 yd³.
 - 3. Hand mix on a watertight platform.
 - 4. Spread the aggregate evenly on the platform and thoroughly mix in the dry cement until the mixture becomes uniform in color.

- C. Truck-Mixed Concrete (Dry-Batch):
1. Do not load trucks in excess of their rated mixing capacity, or 63 percent of the drum gross volume, or less than 2 yd³.
 2. The truck rating plate must be readable.

3.3 MIX DESIGN

- A. Design mixes to meet the requirements of this Section and project specific criteria.
- B. Design the cementitious system to mitigate potential alkali-~~aggregate~~ aggregate reactivity.
1. When using fly ash, use a minimum of 20% by weight of the total cementitious system.
- ~~C.A.~~ Use only concrete mixes that have been approved by the Region Materials Engineer.
- D. Obtain concurrence from the Resident Engineer for the project specific application of an approved mix~~Do not place concrete without written approval of the mix design.~~
- ~~B. Do not change the mix design without written approval.~~

3.4 LIMITATIONS – GENERAL

- A. Timing. Unless otherwise specified, place concrete:
1. Within 90 minutes of batching when the air temperature is below 80 degrees F.
 2. Within 75 minutes of batching when the air temperature is between 80 and 85 degrees F.
 3. Within 60 minutes of batching when the air temperature is ~~between~~ above ~~86-85 and 90~~ degrees F.
 4. Prior to initial set.
- B. Concrete Temperature: Unless otherwise specified, place concrete ~~in the forms~~ when the concrete temperature is between 50 and 90 degrees F.
- C. Pumping and Conveying Equipment
1. Do not use equipment or a combination of equipment and the configuration of that equipment that causes a loss of entrained air content that exceeds one half of the range of air content allowed by specification.
 2. Contractor is responsible for verification and monitoring of air loss.
- D. Cold Weather: Comply with the following regulations for placing concrete when the temperature is forecast to fall below 40 degrees F within 14 days of placement.

1. Do not use chemical “anti-freeze” additives in the concrete. (Note: This does not apply to normal accelerators.)
2. Provide all necessary cold weather protection for in-place concrete (cover, insulation, heat, etc.)
3. Protect the concrete from freezing until a compressive strength of at least 3,500 psi has been achieved, determined by either:
 - a. Maturity method: Refer to AASHTO T 325
 - b. Field cure cylinders
4. Adequately vent combustion-type heaters that produce carbon monoxide.
5. When applying external heat, maintain moist conditions to avoid excessive loss of moisture from the concrete.
6. When removing heat, limit the drop in temperature of concrete surfaces to 20 degrees F during any 12-hour period until the surface temperature of the concrete reaches that of the atmosphere.
7. Determine the concrete temperature with a surface thermometer insulated from surrounding air.
8. Do not proceed with the placement of concrete until the temperature of all contact surfaces is 36 degrees F and ambient temperature is ascending
9. Cease operations when the ambient temperature is 45 degrees F and decreasing.
10. Remove and replace concrete damaged by frost action at no additional cost to the Department.
11. Do not use material containing frost or lumps.

E. Hot Weather: Cool all surfaces that will come in contact with the concrete to below 95 degrees F.

3.5 CYLINDER STORAGE DEVICE

- A. Provide and maintain cylinder storage device.
 1. Maintain cylinders at a temperature range of 60 degrees F to 80 degrees F for the initial 16-hour curing period.
 2. Do not move the cylinders during this period.
 3. Equip the storage device with an automatic 24-hour temperature recorder that continuously records on a time-temperature chart with an accuracy of ± 1 degree F.
 4. Have the storage device available at the point of placement at least 24 hours before placement.
 5. Engineer stops placement of concrete if the storage device cannot accommodate the required number of test cylinders.

6. Use water containing hydrated lime if water is to be in contact with cylinders.
7. A 24-hour test run may be required.

END OF SECTION

Standards Committee Submittal Sheet

Name of preparer: Barry Axelrod

Title/Position of preparer: Standards Coordinator

Specification/Drawing/Item Title: Standards Development Process

Specification/Drawing Number: N/A

Enter appropriate priority level:

(See last page for explanation) N/A

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

During the April 24, 2008 Standards Committee meeting the process to develop and approve new Standards was extensively discussed. Refer to the agenda package for the August 28 meeting, minutes of the April 24 meeting, agenda item 2 for relevant discussion.

This item was presented as a draft proposal for review and discussion at the August 28 meeting.

The Standards Committee suggested that the original people who coordinated on the Research version look at the latest revisions. Stan Johnson sent it to them but only received one response and that was to indicate it was okay. Because the item impacts the Standards Area on how the process works and just those within the Standards Committee on how their respective areas process items through the Standards Section no other coordinate was done.

UDOT Policy 08A5-1 updated to include the flowchart and required wording.

B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

N/A

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

N/A

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg:::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

Reviewed as part of Standards Committee meeting for August 2008. Any comments were provided during the meeting.

ACEC Comments: (Use as much space as necessary.)

Reviewed as part of Standards Committee meeting for August 2008. Any comments were provided during the meeting.

- D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

No additional coordination required.

Construction Engineers

Contractors (Any additional contacts beyond “C” above.)

Suppliers

Consultants (as required) (Any additional contacts beyond “C” above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Others (as appropriate)

E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)

1. Minimum Sampling and Testing Requirements
N/A
2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)
N/A
3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)
N/A

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.
N/A
2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
N/A

3. Life cycle cost.
N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.)
(Estimates are acceptable.) (If no costs, what is the benefit of making this change?)

**To provide a standardized process for new items coming to Standards Committee.
Assists preparer with determining action and direction to take.**

H. Safety Impacts?
N/A

I. History? Address issues relating to the current usage of the item and past reviews,
approvals, and/or disapprovals.
N/A

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

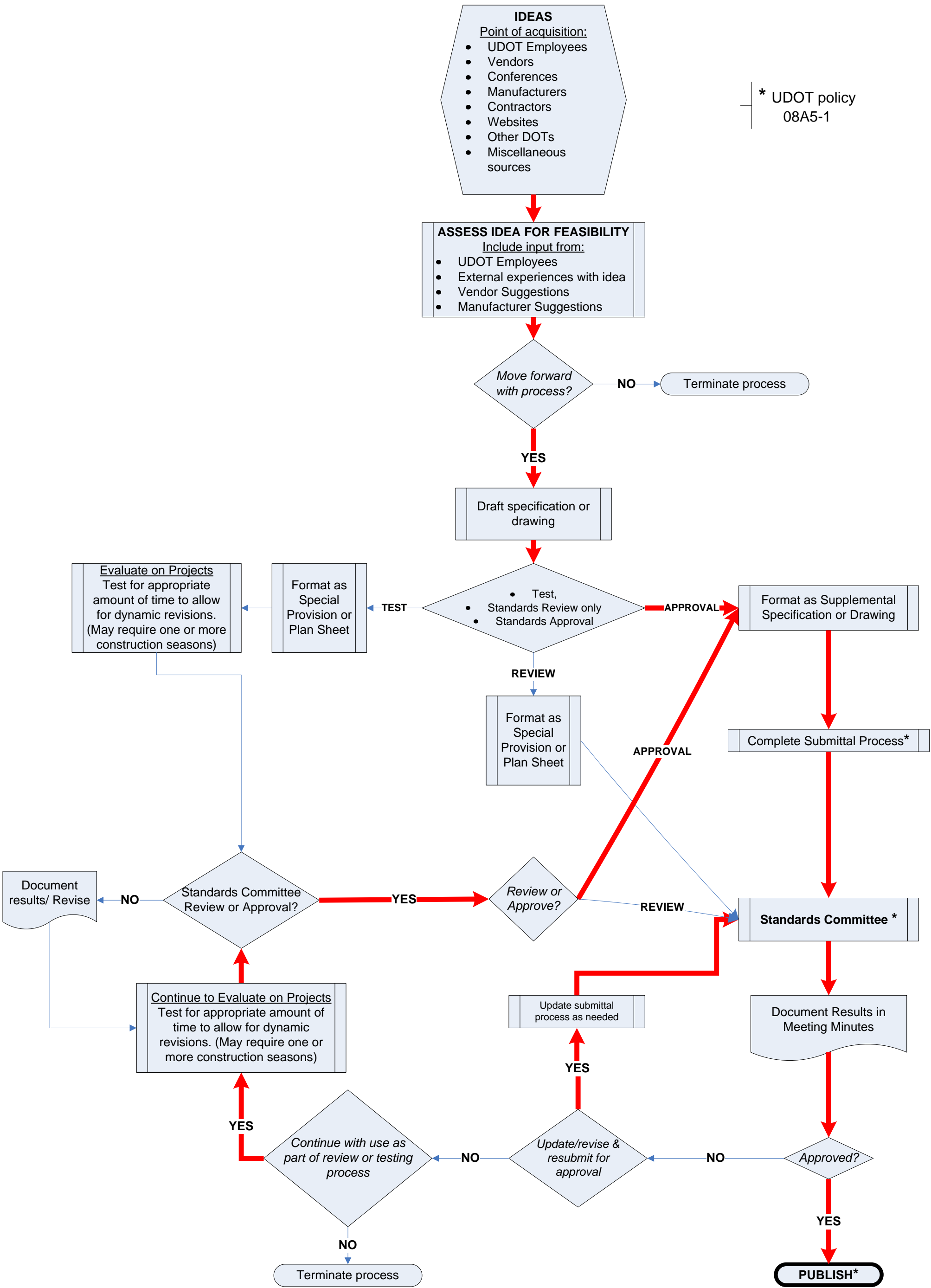
Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Line Item for August 28th, 2008 Standards Committee Meeting:
*Development Recommendation for Handling New Technologies, and Updating the
Standards Committee*

In response to the April 24th, 2008 Standards Committee Meeting action item with regards creating a development recommendation to handle new technologies, the following flowchart is presented.

The flowchart was created under the direction of Shana Lindsey, and is the result of multiple discussions with the persons listed below, with succeeding iterations based on evolving feedback from said personnel.

1. Barry Axelrod—Standards
2. Patti Charles--Standards
3. Ken Berg—New Products Engineer
4. Rich Clarke—Maintenance Engineer
5. Ray Cook—Senior Design Engineer
6. Patrick Cowley—Construction Resource Engineer
7. Mike Donovan—Safety Specialist
8. John Leonard—Engineering Manager II
9. George Lukes— Materials Implementation Engineer
10. Jason Richins—Transportation Technician
11. Glen Schulte— General Maintenance Worker I
12. Greg Searle— Construction
13. Wes Starkenburg— Engineer III



Standards Committee

Effective: June 30, 1967
2008

UDOT 08A5-1

Revised: October 30~~March 19~~,

Purpose

To establish the procedure and place responsibility for the development, revision, and preparation of standard drawings, specifications, and related policies and procedures, and for their review, approval, printing, and distribution.

Policy

The Standards Committee reviews and approves all standard drawings, specifications, supplemental specifications, and related policies and procedures prior to implementation. The Committee also considers relevant matters presented to it by interested units or individuals, formulating appropriate action within its scope of responsibility.

The Standards Committee is composed of ten permanent members, with the Project Development Engineer as chairperson and the Department Preconstruction Engineer serving as secretary. Membership, representing the offices, divisions, sections, or units as indicated, is as follows:

Members

Director, Project Development (Chairperson)

Region Director

Region Preconstruction Engineer

Director, Engineering Services

Engineer for Construction

Engineer for Materials

Engineer for Maintenance

Engineer for Traffic & Safety

Bridge Design Engineer

Intelligent Transportation Systems (ITS) Engineer

Advisory Members

Research Engineer

Federal Highway Administration (FHWA)

Associated General Contractors (AGC)

American Council of Engineering Companies, Utah Branch (ACEC)

Members should appoint a substitute when the member is unable to attend a meeting. The substitute assumes full authority to bind the represented division to a decision by vote or other action in matters pertaining to the Standards Committee. Qualified individuals will continually fill all positions.

Both region positions are appointed by the Deputy Director. The Region Director and Region Preconstruction Engineer members if possible should not be from the same region.

Temporary advisory members may be selected by the Committee to advise and assist when specialized talents are needed. Advisory members do not have the power to vote. However, FHWA approval is required for all standard drawings, standard specifications, and supplemental specifications, where Federal participation is anticipated. This approval is provided in a letter from FHWA presented to the Standards Committee the day of the scheduled meeting in accordance with procedure 08A5-1.3.

Robert's Rules of Order will generally be followed, and in matters not provided for or not applicable, the Committee may formulate its own rules of procedure. Six members are required to constitute a quorum. As a matter of rule, items presented at a regularly scheduled meeting can be approved at that meeting if Attachment 1 has been completed in sufficient detail for the Committee to make an approval decision. Items presented at special meetings will be handled on a case-by-case basis.

Meetings are normally scheduled for the last Thursday, every other month, starting at 8:00 a.m., for four hours. The chairman may call or cancel a meeting, depending upon the quantity and urgency of the business at hand. Three or more of the permanent members may also call meetings.

The Deputy Director has final approval authority of actions of the Standards Committee.

The Deputy Director approves all membership changes.

Definitions

Sponsor

An individual or task force (appointed by the Chairman of the Standards Committee) presenting an item to the Standards Committee. The sponsor should be a member of the Standards Committee or be in contact with a Committee member who is familiar with the subject matter contained in the document.

Technical Staff Support

That support provided by the Standards Section to the sponsor identifying the need for a new or revised document. Works closely with the sponsor or with a task force in the actual preparation of draft or final documents, including supporting documentation.

That support provided by the Standards Section to take actions related to meeting minutes and agenda.

Draft Document

Document prepared for review by the Standards Committee and conforming to specified guidelines.

Final Document

Documents prepared from approved drafts for final review and approval by the Standards Committee and conforming to specified guidelines.

Procedures

Preparation and Approval of Documents by the Standards Committee UDOT 08A5-1.1

Responsibility: Sponsor

Actions

1. Determine need to develop new or revised Standard Drawings or Specifications or the need to present information of interest to the Committee. Refer to Attachment 3 for the Standards Committee Update Process.

Responsibility: Sponsor (with assistance from the Standards Section)

2. Prepare draft of new or revised Specifications, Standard Drawings, or general information as specified below.
 - (a) Specifications, Supplemental Specifications. In the case of a revised document, prepare the draft with the “**MS Word Track Changes**” option turned on.
 - (b) Standard, Supplemental Drawings. Prepare the draft.
 - (c) General Information. Prepare the draft in a format suitable for the information.
3. Complete all Submittal Sheet and Review Comments Requirements
 - (a) Allow all Stakeholders a two-week response time to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.
 - (b) Complete Procedure 08A5-1.4, Stakeholder Notification and return to the next step on completion of Procedure 08A5-1.4 or after 14 calendar days if no comments are received.
4. Submit all pertinent information including a completed attachment 1 and 2, specifications, or drawings to the Standards Section at least 14 working days before a regularly scheduled Standards Committee meeting. Refer to the Standards Committee Web site at <http://www.udot.utah.gov/go/standardscommittee> for meeting dates and deadlines. Include all electronic files where possible. Refer to Standards Committee Web site at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:661> or the 2008 Master Files Web page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:1931> for the submittal sheet and review comments form.

Responsibility: Standards Section

5. Review related documents and make any changes that may be required as a result of the draft of new or revised Standard Drawings, Specifications, or information.
6. Prepare the agenda in accordance with UDOT procedure 08A5-1.2.
7. Publish the entire package to the Standards Committee Web site and send out email notice of publication in accordance with UDOT procedure 08A5-1.2.

Responsibility: Standards Committee Members

8. Review the agenda with attachments prior to the Committee meeting.

Responsibility: Sponsor/Presenter

9. Present the draft of new or revised Standard Drawings, Specifications, or general information with supporting documentation and explanation to the Standards Committee. Refer to Attachment 3 for the Standards Committee Update Process.

Responsibility: Standards Committee

10. Take one of the following actions:
 - (a) Discuss the Standard Drawing, Specification, or information as presented. Approve the item as presented, or
 - (b) Discuss the Standard Drawing, Specification, or information as presented. Approve the item with changes, or
 - (c) Refer the Standard Drawing, Specification, or information back to the Sponsor so that the Sponsor can make required changes before bringing the item back to the Committee for approval, or
 - (d) Reject/defer the Standard Drawing, Specification, or information, or
 - (e) Refer the item back to the Sponsor for required formatting and use in testing or review.

Responsibility: Sponsor and Standards Section

11. When either step 10 (a) or 10 (b) is taken, prepare the final copy of the Standard Drawing, Specification, or information as required and as specified below.
 - (a) Specifications, Supplemental Specifications. Remove all markings made in accordance with item 2A above. Place the effective date of the change on the document. The effective date is the approval date (meeting date) unless the Committee approves a future date. Make any approved or editorial changes in accordance with Step 13.
 - (b) Standard, Supplemental Drawings. Make any approved or editorial changes in accordance with Step 13. On the final drawing(s), place the approval date in both “Recommended for Approval” and “Approved” date lines. The dates are the date that Standards Committee approves the drawing. Complete the “Revisions” section. On Supplemental Drawings add a block indicating “Supplemental Drawing.”
 - (c) General Information. Prepare the final copy in a format suitable for the information. Make any approved or editorial changes in accordance with step 13.
12. When step 9(c) is taken, make the necessary changes and go back through steps 2 through 11.

Responsibility: Sponsor

13. Make the editorial changes to an approved item and send electronic files to the Standards Section within **five** working days from the date of the meeting. If approved with no changes, check with the Standards Section to make sure they have all needed files.

Responsibility: Standards Section

14. For approved Standard Specifications, Supplemental Specifications, Standard Drawings, or Supplemental Drawings complete step 16 of UDOT procedure 08A5-1.2.

Preparation of Minutes and Distribution of Minutes and Approved Items UDOT 08A5-1.2

Responsibility: Standards Section

Actions

1. Attend Standards Committee meeting and as required, gather information needed to transcribe meeting minutes.
2. Following the meeting, prepare a draft of the minutes for review by the Committee Secretary.

Responsibility: Standards Committee Secretary

3. Review and edit the draft of the meeting minutes.

Responsibility: Standards Section

4. Gather information needed to prepare agenda for the next meeting.
5. Make required changes to the meeting minutes.
6. Update the agenda section of the minutes.
7. Review all submitted files and information.
8. Create PDF files of submitted items, compile into one PDF file package, add document page numbering in the PDF file.
9. Publish the agenda package to the Standards Committee Web site at least 10 working days prior to the next regularly scheduled meeting.
10. Send an e-mail to the “Standards Committee Issues” group advising them that the agenda package has been published to the Standards Committee Web site.
11. Make and distribute hard copies of the package to the Chairman and the Standards Section.

Responsibility: Standards Committee

12. Approve with or without modifications, the minutes of the previous meeting.
13. Take action on agenda items in accordance with UDOT procedure 08A5-1.1.

Responsibility: Standards Section

14. Make any required changes to the meeting minutes.
15. File the minutes as required.
16. Publish all changes within 10 working days from the last Standards Committee meeting.

Approval By FHWA

UDOT 08A5-1.3

Responsibility: Standards Section

Actions

1. Notify FHWA in accordance with 08A5-1.2, Step 10 that the minutes agenda package has been published to the Standards Committee Web site.

Responsibility: FHWA

2. Distribute the agenda package downloaded from the Standards Committee Web site within the FHWA Division Office for review and comment as appropriate.
3. Complete an approval letter to be provided the same day of the Standards Committee meeting. Provide the letter prior to the meeting to the Standards Committee Chairperson and Secretary if attendance by FHWA at the meeting is not possible.
4. Provide an electronic copy of the approval letter by e-mail to the Standards Committee Chairperson and Secretary.
5. Provide comments during the regularly scheduled Standards Committee meeting.

Responsibility: Standards Section and Standards Committee

6. Complete UDOT 08A5-1.1, Step 10 to discuss FHWA comments
7. Complete remaining procedural steps for approved items beginning at UDOT 08A5-1.1, Step 11.

Responsibility: Sponsor

Actions

1. Send a copy of the proposed Standard Specification, Supplemental Specification or Standard Drawing and Submittal Sheet by email to the AGC and ACEC Standards Committee representative. If no Submittal Sheet is available provide a memo that outlines the change and the reason for the change.
2. Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.
3. Coordinate with all additional stakeholders in accordance with the Submittal Sheet.
4. Indicate in any email sent out for coordination that a reply is required even if there are no comments and that phone follow up will be conducted with any stakeholder not replying.

Responsibility: AGC/ACEC Committee Member

5. Select at least two AGC or ACEC members each from respective membership to review and comment on the proposed change.
6. Provide comments by return e-mail within 14 calendar days to the Sponsor.

Responsibility: Stakeholders

7. Review and comment on the proposed change.
8. Provide comments by return e-mail within 14 calendar days to the Sponsor.

Responsibility: Sponsor

9. Complete the Review Comments Form available on Standards Committee Web site at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:661> or the 2008 Master Files Web page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:1931> or a suitable substitute. Include contacting stakeholders who did not provide a reply with comments or indicated no comment.
10. Return to Procedure 08A5-1, step 4 and continue the process.

Attachment 1 - Standards Committee Submittal Sheet

Standards Committee Submittal Sheet

Name of preparer: _____
Title/Position of preparer: _____
Specification/Drawing/Item Title: _____
Specification/Drawing Number: _____

Enter appropriate priority level:

(See last page for explanation) _____

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

- B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

ACEC Comments: (Use as much space as necessary.)

- D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Contractors (Any additional contacts beyond “C” above.)

Suppliers

Consultants (as required) (Any additional contacts beyond “C” above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Others (as appropriate)

- E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)
 - 1. Minimum Sampling and Testing Requirements
 - 2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)
 - 3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

- F. Costs? (Estimates are acceptable.)
1. Additional costs to average bid item price.
 2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
 3. Life cycle cost.
- G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.) (If no costs, what is the benefit of making this change?)
- H. Safety Impacts?
- I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

- | | |
|------------|---|
| Priority 1 | Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised. |
| Priority 2 | Upon posting, this impacts projects being advertised. |
| Priority 3 | Upon posting, the approved standard takes effect four weeks later for projects being advertised. |

| | | | | | |
|---|--|--|-----------------|----|----|
| Standard Drawing/Specification Review Sheet | | | Review Comments | | |
| Std Dwg/Spec Number | | | Sheet 15 | of | 17 |
| Date: | | | Facilitator: | | |

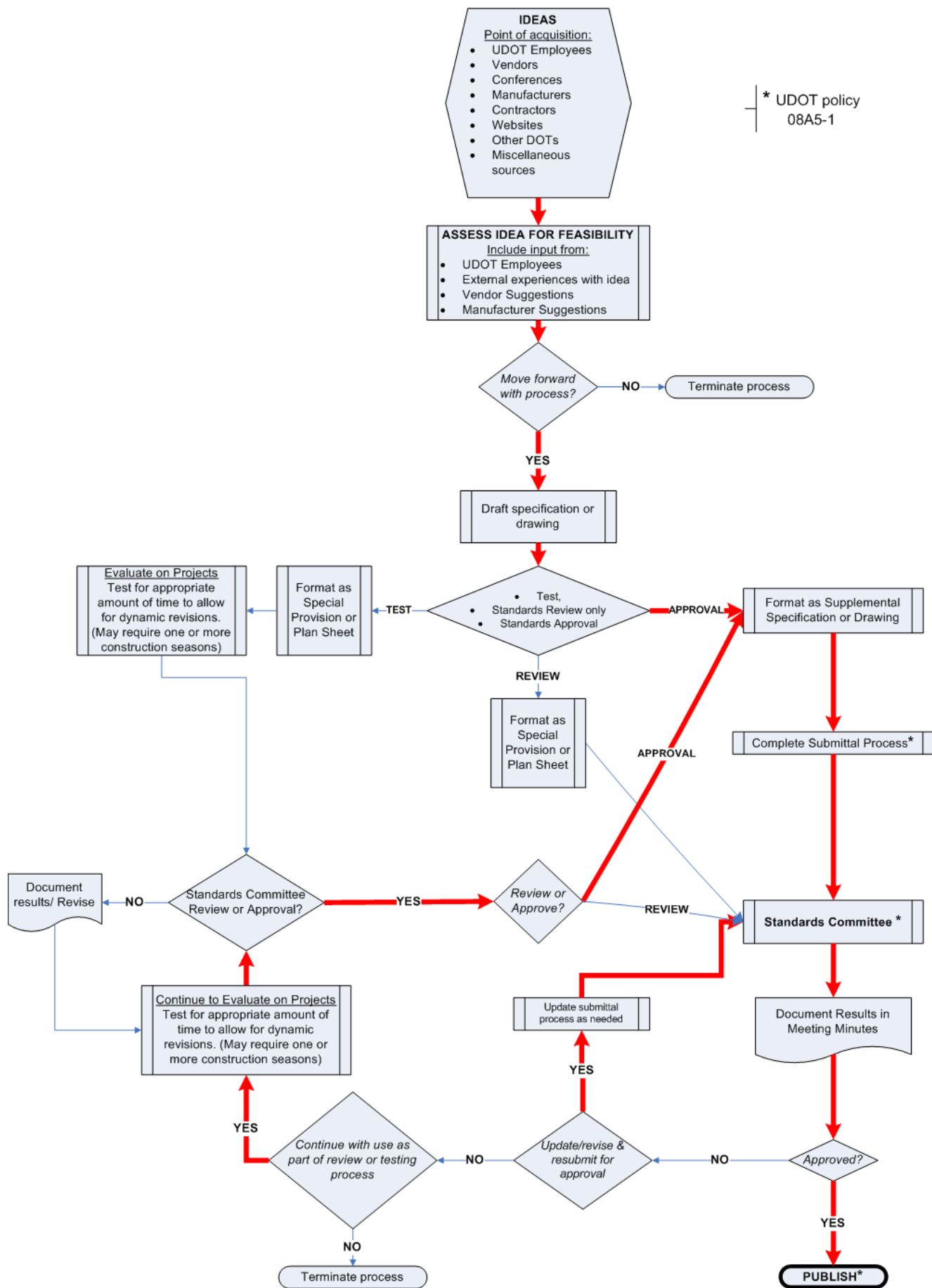
Attachment 2 - Standards Committee Review Comments Form

Review Comments Form

| Item No. | Reviewer | Sheet/Section No. | Comment | Review Mtg. Action | Final Action. |
|----------|----------|-------------------|-----------|--------------------|---------------|
| 1 | | | | | |
| | | | Response: | | |
| 2 | | | | | |
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| | | | Response: | | |
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| 10 | | | | | |
| | | | Response: | | |

Attachment 3 - Standards Committee Update Process

Refer to the next page for flowchart process.



Standards Committee Submittal Sheet

Name of preparer: Mark E. Elieson and Robert Miles

Title/Position of preparer: Drafter, UDOT Standards and Specifications

Specification/Drawing/Item Title: Barrier Offset Issue

Specification/Drawing Number: BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7A, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8, DD 9, DD 17

Enter appropriate priority level:

(See last page for explanation)

3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Elimination of the 2 ft barrier offset on roadways requiring a 12 ft or wider shoulder will reduce Construction costs and right of way acquisition costs. New note added to all drawings.

On BA 1E, the original Note 9 was deleted and replaced with a new note for barrier offset requirements.

As part of the change to BA 4E, the drawing is being split into two drawings, BA 4E1 and BA 4E2 because the current drawing is too crowded.

The details on CC 7B were rearranged to fit on the sheet.

B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

No change

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

Sent September 30, 2008. Refer to Comment Form for inputs.

ACEC Comments: (Use as much space as necessary.)

Sent September 30, 2008. Refer to Comment Form for inputs.

- D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Sent September 30, 2008. Refer to Comment Form for inputs.

Construction Engineers

Contractors (Any additional contacts beyond “C” above.)

Suppliers

Consultants (as required) (Any additional contacts beyond “C” above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Sent September 30, 2008. Refer to Comment Form for inputs.

Others (as appropriate)

- E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)

1. Minimum Sampling and Testing Requirements

No change

2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)

No change

3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

Implementation will be handled through the standard process of publishing standards and notification.

- F. Costs? (Estimates are acceptable.)
1. Additional costs to average bid item price.
No change
 2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
Lower maintenance costs, due less surface area to maintain.
 3. Life cycle cost.
No change
- G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.) (If no costs, what is the benefit of making this change?)
- Lower construction cost and lower right of way acquisition cost.
- H. Safety Impacts?
- I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

- Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.
- Priority 2 Upon posting, this impacts projects being advertised.
- Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

| | | | | |
|---|-----------------|-----------------|--------------------------------|----|
| Standard Drawing/Specification Review Sheet | | Review Comments | | |
| BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | | Sheet 1 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

| Item No. | Reviewer | Sheet/Section No. | Comment | Review Mtg. Action | Final Action. |
|----------|-----------------------|-------------------|--|--|---------------|
| 1a | Anne Ogden (email) | BA 1D | *Top left detail: -Note 1: specify that no pins are required except on first and last 2 sections, as detailed below? -Note 2: specify that pins are required in all sections? Additional notes not required, drawing indicates when the stabilization pins are required. *Top right detail: -Why label “useable shoulder”? It’s not called that anywhere else. Removed reference to Useable Shoulder *Can the “Median Installation w/ Offset Roadway” detail and “Median Installation with Slopes Steeper Than 4:1” detail be combined? What’s the purpose of having they separate? Oftentimes “offset roadways” have slopes steeper than 4:1 in the median. Combining details: reviewers felt the details offer substantially different information and to try and combine all information on one detail would be confusing. The reference to the 4:1 slope on Median Installation w/Offset Roadway will be removed. *Note 2: Hyphenate non-permeable Note 2: corrected *Note 5: How deep does the 1” hole have to be? Note 5: indicates through paved surface, cannot be a specified depth, roadway surfaces depths vary. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
| | | | A | | |
| | | | C | | |
| | | | A | | |
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| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 2 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

| | | | | | |
|----|-----------------------|-------|--|--|---|
| 1b | Anne Ogden (email) | BA 1E | <p>*Extend dimension lines on "Edge of Shoulder" on Option 2 and 3:1 or Steeper Backslope Option Completed</p> <p>*Buried in backslope detail: Move leader arrow from "Terminal Section" text to point to the last section. Completed</p> <p>*Should "See Note 5" references on the stabilization pin detail and the Two-lane/Two-way" and "Multi-lane Arterial" details actually reference note 4? Change made</p> <p>*Hyphenate "Two-lane/Two-way" Completed</p> <p>*Note 4: Delete extra "required" on 2nd line Completed</p> <p>*Note 4, part B: delete "s" on the first use of "barrier ends" (1st line of "B") Completed</p> <p>*Note 4, part B: add "is" to last line (or Crash Cushion is not required.) Completed</p> <p>*Note 4, part C: add a period at the end Completed</p> <p>*Note 5: specify 10:1/8:1 slope behind barrier...not just 8:1 A 10:1 slope is flatter than 8:1 so it is implied any slope flatter is acceptable no change is required</p> <p>*Note 5: delete "and" at end of 2nd-to-last line ("steeper than 10:1/8:1 within 3' of the barrier backside.") These are two conditions that need to be met together before compliance is required.</p> <p>*Note 6: How deep does the 1" hole have to be? Note 6: indicates through paved surface, cannot be a specified depth, roadway surfaces depths vary.</p> <p>*Note 6: Add a space after 1" Completed</p> <p>*Note 7: How far, if at all, can barrier be placed behind any curbing? Does that need to be specified? Added "10 offset from face of curb required."</p> <p>*Note 8: Does it need to be specified that the barrier needs to be reset if this situation is going to occur? Reviewers agreed this is implied by note as written no additional explanation is required.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A A A A A A A C C C A A C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 3 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|-----------------------|--------|---|--|---|
| 1c | Anne Ogden (email) | BA 4E1 | <p>*Does an attachment method need to be specified for when the posts are steel (since nails don't work to attach planks to steel posts)?</p> <p>Note will be added</p> <p>*Add note to "Anchor Type 1" callout on "Typical Installation" detail to "see note 1" so it's clear that the CC is still required for barrier ends within 1.2*CZ of opposing traffic, even though a Type I Anchor is shown.</p> <p>Reference will be added</p> <p>*Note 5 is confusing. Consider rewording.</p> <p>Reviewers found wording satisfactory</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | C |

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|----|-----------------------|--------|---|--|---|
| 1d | Anne Ogden (email) | BA 4E2 | <p>*Why is the guardrail height not shown as the range "27 1/2" to 30" " on any of the three times it's detailed on the top of the page?</p> <p>6:1 Slope detail close to roadway: Rail should be set at 27 1/2 height so a vehicle does not get under the rail on a shallow impact when the wheel drops off onto the slope.</p> <p>6:1 Slope detail $\geq 12'$: in most situation additional fill would not be added out this far when an overly occurs. The 27 1/2 height showed the optimum redirection height during testing.</p> <p>*Note 4: Add an "s" to "post" on 1st line and remove the word "line" in the 2nd line?</p> <p>Added "s", line is an industry std.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | C |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 4 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|--------------------|-------|--|--|-------------------------------|
| 1e | Anne Ogden (email) | BA 4L | <p>*If CRT #1 is the first CRT post, there are only 10 shown, as the dimension says. But, according to the table, 11 are required. Please clarify.</p> <p>10 around the radius plus 1 with a block (A)</p> <p>*Where is the "Anchor Detail" that's referred to?</p> <p>Bottom of pg. Curved GR Anchor Ref to note.</p> <p>*Should Note 3 and the table heading say that recovery area is to be free of "Hazards" instead of "Fixed Objects"? Or does "fixed objects" include steep or otherwise dangerous slopes?</p> <p>Fixed object are non-breakaway hazards, this detail was developed and tested to prevent a vehicle from running into a pit or have a "controlled" capture. Slopes can be variable testing was done with a 2:1 slope.</p> <p>*Specify "Shoulder" varies by design on Section A-A detail.</p> <p>Will be added</p> <p>*Fix the spaces in the 13/16" dia. hole callout in lower left detail.</p> <p>Completed</p> <p>*Note 6: typo: transition Completed</p> <p>*Note 7: Reword? "Use Anchor Type I when barrier end is within 1.2 times the AASHTO Roadside Design Guide Clear Zone of opposing traffic." (match note on BA 4E1)</p> <p>You have miss read note on BA 4E1, note on this drawing is correct.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C C C A C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

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|----|--------------------|-------|---|--|-------------|
| 1f | Anne Ogden (email) | CC 5A | <p>This is a drawing for a specific system.</p> <p>*Specify that hole in post in "Section B-B" detail is the 2" hole referred to in the note.</p> <p>Reviewers felt this is a non-issue</p> <p>*Are there some lines missing in the "Section A-A" detail?</p> <p>No, this is how the system looks</p> <p>*Note 6 is contradictory. Consider rewording to say "Clear Recovery and approach areas of any fixed objects. Any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements."</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C C C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 5 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|-----------------------|-------|---|--|---|
| 1g | Anne Ogden (email) | CC 5B | <p>*Note 6 is contradictory. Consider rewording to say "Clear Recovery and approach areas of any fixed objects. Any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements."</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

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|----|-----------------------|-------|--|--|---|
| 1h | Anne Ogden (email) | CC 5C | <p>This is a drawing for a specific system.</p> <p>*Should "Object Marker on Impact Head" note also be pointing to the other end of the detail on Section "A-A"? (Or add "TYP" to the callout?)</p> <p>Refer to Note 8, an additional call out was made because this system has two impact heads no reviewer feel no other notation required.</p> <p>*Note 6 is contradictory. Consider rewording to say "Clear Recovery and approach areas of any fixed objects. Any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements."</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | C |

| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 6 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|-----------------------|-------|---|--|---|
| 1i | Anne Ogden (email) | CC 7B | <p>*Should "Note 4" references near top of page actually reference Note 5? Corrected</p> <p>*Does a width need to be specified for the recovery area at the toe of the 3:1 slope? Or add that to Note 9 to refer to the Roadside Design Guide? Or can that be inferred to be included in "Clear Zone Requirements"?</p> <p>NO, you should add the width, is variable, of the 3:1 slope at the toe of slope to the 4:1 slope. 3:1 slope is traversable not recoverable, 4:1 is traversable and recoverable.</p> <p>*Should "Note 5" references on the 4:1 slopes actually reference Note 6? Corrected</p> <p>*On bottom detail, specify 5' MIN behind the CC head? Corrected</p> <p>*Note 2: What "system" is this referring to? This is vague to me. Refer to note 1 and title</p> <p>*Note 6: Add a space between "flatter" and "slopes" on part A. Corrected</p> <p>*Note 7 is contradictory. Consider rewording to say that any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements.</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | C |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 7 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|--------------------|-------|--|--|------------------|
| 1j | Anne Ogden (email) | CC 8A | <p>*Add a leader to point to "Edge of Travel Lane" (3 occurrences) Will try to fix.</p> <p>*Why is 4:1 or flatter slope after 3:1 MAX slope dimensioned as "Clear Zone Limit"? This is confusing to me. See comments for CC 7B, this is the same explanation.</p> <p>*Note 6 is contradictory. Consider rewording to say that any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements.</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written</p> <p>*Note 7: Where else is "Platform" defined, called out, or referenced? Is there a better word to use? Or can references be added in the details?</p> <p>The "platform" is the areas being constructed in order for the system to be placed on and in advanced of the system. Reviewers feel this is a simple term and no change is required.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A C C C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

| | | | | | |
|----|--------------------|-------|---|--|-------------|
| 1k | Anne Ogden (email) | CC 8B | <p>*Note 5: add a "Y" to "recover" on part "B"</p> <p>Corrected</p> <p>*Note 6 is contradictory. Consider rewording to say that any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements.</p> <p>Note is specifying 2 separate areas, "Approach" and "Recovery" Reviewers feel the note is correct as written</p> <p>*Note 7: Where else is "Platform" defined, called out, or referenced? Is there a better word to use? Or can references be added in the details?</p> <p>The "platform" is the areas being constructed in order for the system to be placed on and in advanced of the system. Reviewers feel this is a simple term and no change is required.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A C C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 8 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|--------------------|-------|--|--|--|
| 11 | Anne Ogden (email) | CC 9A | <p>*Why is 4:1 or flatter slope after 3:1 MAX slope dimensioned as "Clear Zone Limit"? This is confusing to me. See comments for CC 7B, this is the same explanation. *Note 4: Where are the 3 sections of 12 1/2-ft rail to be used? This is a system specific, these systems are available with 12½' or 25' sections. UDOT has determined the use of 12½' sections is most cost effective. You must have a manufacture's installation manual for proper placement in the system. *Note 6 is contradictory. Consider rewording to say that any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements. See explanation in comment for CC 7B *Note 7: Where else is "Platform" defined, called out, or referenced? Is there a better word to use? Or can references be added in the details? See explanation in comment for CC 7B</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

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|----|--------------------|-------|---|--|---|
| 1m | Anne Ogden (email) | CC 9B | <p>*Why is 4:1 or flatter slope after 3:1 MAX slope dimensioned as "Clear Zone Limit"? This is confusing to me. See comments for CC 7B *Note 4: Where are the 3 sections of 12 1/2-ft rail to be used? See explanation in comment for CC 9A *Note 6 is contradictory. Consider rewording to say that any signs or poles placed in the recovery area will be breakaway and be a minimum of 10 feet from system rail elements. See explanation in comment for CC 7B *Note 7: Where else is "Platform" defined, called out, or referenced? Is there a better word to use? Or can references be added in the details? See explanation in comment for CC 8B</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | C |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | C |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

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|---------------------|---|--------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 9 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|--------------------|------|---|--------------|---|
| 1n | Anne Ogden (email) | DD 8 | *Why is only a 2' MIN space required behind the barrier instead of 3'? | Robert Miles | D |
| | | | Response: This is a good question, but not related to the actual changes made to the drawings. Submitter will review this detail with the drawing owner. | | |

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|----|--------------------|------|-------------------------------|--|-------|
| 1o | Anne Ogden (email) | DD 9 | No comments | | |
| | | | Response: No action required. | | None. |

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|----|--------------------|-------|--|--------------|---|
| 1p | Anne Ogden (email) | DD 17 | *Is there a maximum slope that should be specified for the median slopes in the "Grade Separated Arterial" detail? Slope issues are better defined in NOTE 3. | Robert Miles | C |
| | | | *Hyphenate "Grade-Separated" This will be updated | | A |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | |

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|---|------------------------|------------------|---|--------------|---|
| 2 | Anthony Sarhan (email) | BA 4E1 BA 4E2 | Referred the submittal to Roland Stanger, comments will be in by end of business 10/9/08. I have already talked to Robert Miles about the following: BA 4E1, Upper left layout: Note 1 (about the 12 foot effective shoulder) is worded differently than all the other similar notes on other drawings BA 4E2, upper left layout: Doesn't have a note about the 12 foot effective shoulder. He will take care of them. | Robert Miles | A |
| | | | Response: Completed | | |

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|---|----------------------|--|--|--------------|---|
| 3 | Betty Purdie (email) | | Called left message 10/8/08 2:12 pm . I have reviewed the drawings and only have one comment: On DD9 Why not combine A from the legend and Note 1 it would make it much cleaner. Otherwise they are fine. | Robert Miles | A |
| | | | Response: This will be updated | | |

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|---|------------------------|-------|--|---|--|
| 4 | Brad Humphreys (email) | BA 1D | Called left message 10/08/08 2:16pm The BA 1D Drawing that shows the 10:1 or flatter slope for the 2' optional section on the median installation detail indicates a change in the slope from the compacted shoulder and the Non permeable material. This should be shown as a constant slope of 10:1 or flatter. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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| | | | Response: This will be corrected | | A |
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| 5 | Brent Schvaneveldt (email) | | no comments | | |
| | | | Response: No action required. | | None. |

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|---|-----------------------|--|---|--|-------|
| 6 | Darin Duersch (email) | | Left message 10/08/08 2:20pm Unable to make contact as of 10/14/08 | | |
| | | | Response: No input received. | | None. |

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| 7 | Doug Bassett (email) | | No comments. | | |
| | | | Response: No action required. | | None. |

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| 8 | Fred Doehring (email) | | I have reviewed the proposed changes and concur with them. | | |
| | | | Response: No action required. | | None. |

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| 9 | Gaye Hettrick (email) | | Not required. | | |
| | | | Response: | | None. |

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| 10a | Glenn Schulte (email) | | BA 1D: concur with Note 7 addition BA 1E: concur with Note 9 addition BA 4E: concur with the slit of the drawing to 2 drawing BA 4E1 & BA 4E2 concur with the note added to details for "barrier offset requirement" on each drawings. BA 4E2: additional change to Barrier Installation on 6:1 Slope Detail, "MIN" removed from offset requirement, inserted " \leq " in front of the 2'. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Changes made with Mark. | | A |

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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| 10b | Glenn Schulte (email) | <p>BA 4L: concur with Note 9 addition</p> <p>CC 5A, B, & C: concur with the note added on each drawing detailing "barrier offset requirement" .</p> <p>CC 7B: concur with Note 10 addition</p> <p>Additional changes made: Changes made with Mark.</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 7: added the words "or hazards" at the end of Note 7. Better clarification for contractors and inspectors. This should be editorial.</p> <p>Extend Section line on top view to match shown Section. This should be editorial.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| Response: Changes made with Mark. | | | | A |

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| 10c | Glenn Schulte (email) | <p>CC 8A: concur with Note 11 addition</p> <p>Additional changes made, I believe are editorial. Changes made with Mark</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 6: added the words "or hazards" at the end of Note 6. Better clarification for contractors and inspectors. This should be editorial.</p> <p>Extend Section line on top view to match shown Section.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| Response: Changes made with Mark. | | | | A |

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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|-----|-----------------------|--|--|--|---|
| 10d | Glenn Schulte (email) | | <p>CC 8B: concur with Note 11 addition</p> <p>Additional changes made, I believe are editorial. Changes made with Mark</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 6: added the words "or hazards" at the end of Note 6. Better clarification for contractors and inspectors.</p> <p>Extend Section line on top view to match shown Section.</p> <p>Response: Changes made with Mark.</p> | | A |
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| 10e | Glenn Schulte (email) | | <p>CC 9A: concur with Note 11 addition</p> <p>Additional changes made, I believe are editorial. Changes made with Mark</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 6: added the words "or hazards" at the end of Note 6. Better clarification for contractors and inspectors.</p> <p>Extend Section line on top view to match shown Section.</p> <p>Response: Changes made with Mark.</p> | | A |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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|-----|-----------------------|--|--|--|---|
| 10f | Glenn Schulte (email) | | <p>CC 9B: concur with Note 11 addition</p> <p>Additional changes made, I believe are editorial. Changes made with Mark</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 6: added the words "or hazards" at the end of Note 6. Better clarification for contractors and inspectors.</p> <p>Extend Section line on top view to match shown Section.</p> | | |
| | | | Response: Changes made with Mark. | | A |

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|-----|-----------------------|--|---|--|---|
| 10g | Glenn Schulte (email) | | <p>DD 8, 9, & 17: concur with the addition on note detailing barrier offset requirement.</p> | | |
| | | | Response: Changes made with Mark. | | A |

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|-----|-----------------------|--|---|--|---|
| 10h | Glenn Schulte (email) | | <p>CC 7A: changes have been made to this drawing also which I feel are also editorial in nature.</p> <p>Note under Table 1, and the "D" dimension added at the head of the top view. These changes were made to give better direction to the contractor on how to figure the required Approach Area.</p> <p>Note 6: added the words "or hazards" at the end of Note 9. Better clarification for contractors and inspectors.</p> <p>Extend Section line on top view to match shown Section.</p> <p>I will get with Mark and add the additional changes made into the Revisions Box.</p> | | |
| | | | Response: Changes made with Mark. | | A |

| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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|----|---------------------|--|--|-------|
| 11 | Greg Searle (email) | Will email comments this week 10/08/08 No response as of 10/14/08 Response: No input received. | | None. |
|----|---------------------|--|--|-------|

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| 12 | Jim McConnell (email) | Left message 10/08/08 2:29pm I reviewed the drawings and they look good to me. Response: No action required | | None. |
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|----|----------------------|--|--|-------|
| 13 | John Leonard (email) | Will respond back 10/09/08 Reviewed with Glenn Schulte. Response: No action required | | None. |
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| 14 | Kelly Barrett (email) | I have reviewed them and did not see anything amiss. Response: No action required. | | None. |
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| 15 | Ken Talbot (email.) | Is the note and call out needed on BA 4E2 barrier installation on 6:1 slope detail? Response: That detail was changed to read less than or equal to 2'. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
|----|---------------------|--|--|---|

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| 16 | Kris Peterson (email) | no comment Response: No action required. | | None. |
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| 17 | Lisa Wilson (email) | I don't have any issues with this change--it is a great thing for us. Response: No action required. | | None. |
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| 18 | Mike Donovan (email) | Out of the office till 10/13/08 10/13/08 e-mailed Gave Glenn my comments. Response: No action required. | | None. |
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| 19a | Mike Miles (email) | I have no other comments. I have also asked my design team to review this and send you their comments. Response: No action required. | | None. |
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| 20 | Mont Wilson (email) | I will accept the changes Response: No action required. | | None. |
|----|---------------------|--|--|-------|

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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|--------------------|---|--|-------|
| 21 | Pete Negus (email) | Left message 10/08/8 3:13pm Unable to make contact as of 10/14/08. | | |
| | | Response: No input received. | | None. |

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| 22 | Rex Harris (email) | I'm ok with the change. | | |
| | | Response: No action required. | | None. |

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| 23 | Richard Clarke (email) | I don't see any problems with the changes. | | |
| | | Response: No action required. | | None. |

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| 24 | Richard Miller (email) | Fred Doehring will respond for Structures Design. | | |
| | | Response: No action required. | | None. |

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| 25 | Rob Wight (email) | The change is a good clarification of the AASHTO Green Book. This is a needed clarification. | | |
| | | Response: No action required. | | None. |

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| 26 | Robert Dowell (email) | Will respond by the end of this week 10/08/08 No response as of 10/14/08. | | |
| | | Response: No input received. | | None. |

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| 27 | Robert Westover (email) | No Comment reply by email | | |
| | | Response: No action required. | | None. |

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|----|----------------------|---|--|---|
| 28 | Scott Andrus (email) | Left a message 10/08/08 3:24pm The only suggestion I have on this drawing is where it is shown that "compacted material" be placed between the edge of pavement and the barrier base that material should just be called out as HMA. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
| | | Response: Will add additional description "OR EXTENDED PAVEMENT SECTION". | | A |

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| 29 | Stan Adams (email) | Called 10/08/08 3:30pm, No comment on submittal. | | |
| | | Response: No action required. | | None. |

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| 30 | Steve Ogden (email) | The modification sounds good to me. | | |
| | | Response: No action required. | | None. |

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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

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|----|------------------------|--|--|--|---|
| 31 | Troy Torgersen (email) | | Left message 10/08/08 3:35pm , >>> Troy Torgersen 10/9/2008 2:06 PM >>> I spoke with both John and Glenn this morning. They will forward any comments to you. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Talked with Troy and incorporated his comments with mine. | | A |

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|-----|------------------------|-----|---|--|---|
| 32a | Tyler Yorgason (email) | All | Will e-mail response by the end of today 10/08/8 The wording of the note is a little odd and allows room for confusion. Technically an 11' shoulder would require the 2' offset and a 12' shoulder wouldn't; however they added the word "effective", possibly with that in mind. Anyway, I think the wording could be improved but the idea is probably understood just fine. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Revise to "1. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL." | | A |

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|-----|------------------------|--------|--|--|---|
| 32b | Tyler Yorgason (email) | BA 4E2 | Also on sheet BA 4E2 they did not add the 2' offset note to the detail regarding "Barrier Installation on 6:1 Slope". Maybe that was intentional but I don't see why we would need the 2' offset adjacent to wide shoulders in that application. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: That detail was changed to read less than or equal to 2'. | | A |

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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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|-----|------------------------|--------|---|--|---|
| 32c | Tyler Yorgason (email) | BA 4E2 | Related to No. 1 above, it may be helpful to identify the "effective shoulder" (which, I believe, is the distance from the edge of traveled way to the face of the barrier). It could be either graphically on the drawings or in a note. I don't know, is this actually defined somewhere else (AASHTO, UDOT MOI)? | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL." | | A |

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| 32d | Tyler Yorgason (email) | BA 4E1 | On Sheet BA 4E1, why not use the same note for both the standard post and the long post installation details (I like note 1 on the standard post detail). Should the note be the same across all the drawings? | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Reworded the note to match standard post detail. | | A |

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| 32e | Tyler Yorgason (email) | BA 4E2 | I know it was shown the same on the previous drawing, but on BA 4E2, shouldn't the "2' MIN" shown between the shoulder and the front of the guardrail be changed to either 2' or to show some upper limit? | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Spoke with Tyler; his concern was on the 6:1 slope detail. He was OK with the new change. | | A |

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|----|-----------------------|--|---|--|-------|
| 33 | Lyle McMillan (email) | | Called out of the office this week , 10/08/08 3:41pm Does not apply to us. | | |
| | | | Response: No action required. | | None. |

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|----|---------------------|--|--|--|-------|
| 34 | Robert Hull (email) | | Called 10/08/08 will have a response this week. No response as of 10/14/08. | | |
| | | | Response: No input received. | | None. |

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|----|---------------------------|--|--|--|-------|
| 35 | Essy Rahimzadegan (email) | | Left message 10/08/08 3:50pm No comment . 10/09/08 Response: No action required. | | None. |
|----|---------------------------|--|--|--|-------|

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|----|-----------------------|--|--|--|-------|
| 36 | Jerry Timmins (email) | | Left message 10/08/08 4:00pm Unable to make contact as of 10/14/08. Response: No input received. | | None. |
|----|-----------------------|--|--|--|-------|

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|----|--------------------|--|--|--|-------|
| 37 | Jeff Baird (email) | | No comment. Response: No action required. | | None. |
|----|--------------------|--|--|--|-------|

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| 38 | Nancy Jerome (email) | | no comment Response: No action required. | | None. |
|----|----------------------|--|---|--|-------|

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| 39a | Dave Schwartz (forwarded from Lisa Wilson) | | Lisa Wilson forwarded me these drawings and I reviewed the proposed drawings. I am ok with the new notes with the exception of the median application. I don't think that it went far enough. As I stated in a note on the drawing if a median has a 10 ft. shoulder on each side why does barrier need to be pinned. If this barrier were hit and say the barrier moved say 5 ft. then all that would take place is that opposing traffic would have a 5 ft. shoulder in that area until the barrier got moved back and replaced or fixed. If this was an outside shoulder only 3 ft would be required. If part of the reason to change this is to make it more cost effective then this should be considered as well. Response: The center median pinning application was developed after several incidents of impacting vehicles, commonly heavy trucks, which hit the barrier and it went into on coming traffic. Two cases that I am aware of the shoulder widths were greater than 10'. The 12' is what those in Traffic & Safety believe is a conservative distance but a safe and effective distance. | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | A |
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| 39b | Dave Schwartz (forwarded from Lisa Wilson) | | I also reviewed the drawings for other things I feel may be of issue if anyone is interested. Response: Sent Dave a reply asking if his additional comments also included in the files he sent and if not to send them to us for review. Nothing received to date. | | None. |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| 39c | Dave Schwartz (forwarded from Lisa Wilson) | BA 1D | <p>Why is it pinned in the median if there is a 10 ft. shoulder on each side. If this were hit and the barrier moved 5 ft the other direction would still get thru and have only a 5 ft shoulder until the barrier was put back. In a outside shoulder application 3 ft is all that is required behind so why so much more in the median application? See comment line 39A All drawings make it look like pavement can't flow away from the median. CORRECTED Why does surface under barrier need to be 4 feet wide. Why doesn't 2 feet (the width of the barrier) work? This was asked for by maintenance years ago, they had concerns with the washout that was occurring behind the barrier and maintaining the growth of vegetation. What is non permeable surface? UTBC with MC-70 or gravel with plastic over it? Is the purpose to keep water out or a certain strength? Any material that will not wash away and the water also drains. NO strength requirement. Will change note to read 'Stable Non Erodible'.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | A |

| Action Code | A | B | C | D |
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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|-----|---|-------|---|--|---|
| 39d | Dave Schwartz (forwarded from Lisa Wilson) | BA 1E | <p>See comments from BA 1D. Three details lower left What does note 5 have to do with the widths of the lane and the shoulder? (Typ) Changed to: NOTE 4 Top four details This would be a maintenance nightmare. The drawing allows a 1 ft. unpaved section. There should really be a min unpaved section allowed. Will add additional description "OR EXTENDED PAVEMENT SECTION". It would be nice to put what lengths the barrier and Guardrail come in. I have see designers callout 52.7 ft of barrier and then it either gets overrun or shorted in the field. This is detailed in Standards both on concrete (BA 1A) and w-beam (BA 4A)</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | A |

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|-----|---|-------|--|--|---|
| 39e | Dave Schwartz (forwarded from Lisa Wilson) | BA 4L | <p>Note 1, Why summary sheets?</p> <p>Table, Shouldn't the L and W be based off of Speed not radius? an L of 50 for the minor road is way outside any clearzone at any speed. Guardrail in put up in situations like this to protect items in the shown recovery area such as poles, ditches, etc. If nothing can be put in this area then why use this application? You are placing an obstruction (the guardrail itself) to protect nothing. I can't think of when you would use this application.</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response This detail was developed and tested to prevent a vehicle from running into a pit or have a "controlled" capture. The shorter radius will capture a vehicle quicker than longer one so the recover area has to be lager for the lager radius. My understanding is that the detailed radiuses were all tested at 100 kph (62mph). Slopes can be variable testing was done with a 2:1 slope. The reason for the recover area is if a vehicle does impact the rail that is does not hit another object while being capture by the rail. | | A |

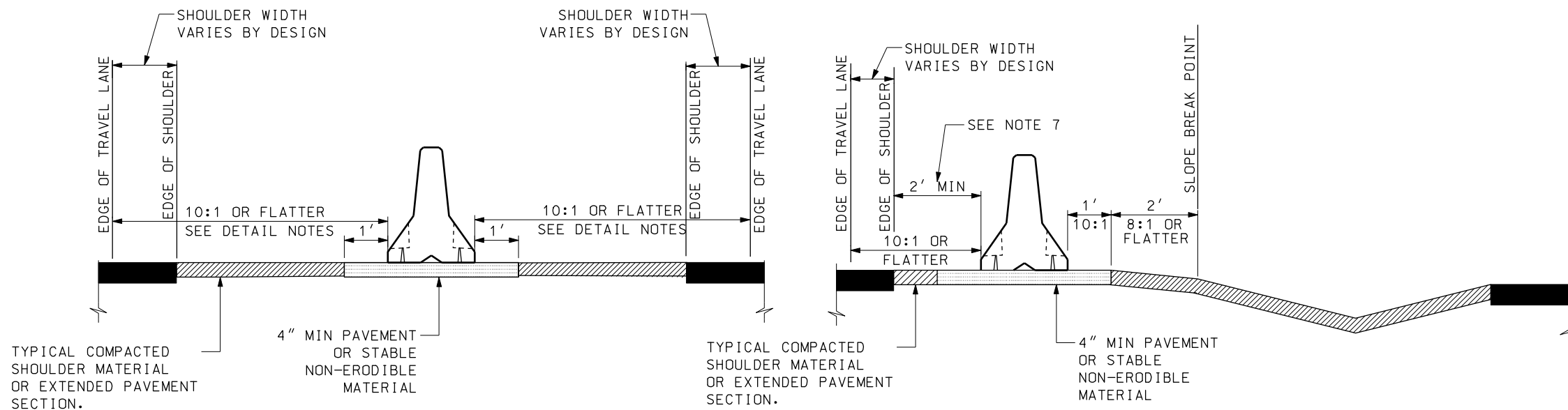
| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

| Standard Drawing/Specification Review Sheet | | Review Comments | | |
|---|---|-----------------|---------------------------------------|----|
| Std Dwg/Spec Number | BA 1D, BA 1E, BA 4E1, BA 4E2, BA 4L, CC 5A, CC 5B, CC 5C, CC 7B, CC 8A, CC 8B, CC 9A, CC 9B, DD 8 DD 9, DD 17 | Sheet 21 | of | 21 |
| Date: | October 9, 2008 | Facilitator: | Barry Axelrod and Mark Elieson | |

| | | | | | |
|-----|---|-------------------------|---|--|---|
| 39f | Dave Schwartz (forwarded from Lisa Wilson) | CC 5A CC 5B CC 5C | <p>Is this a proprietary item? If yes why don't we use the manufactured recommendations? If yes why are we doing a standard drawing? What if another company meets all of UDOT's requirements and is cheaper. Can they not be used until we draw another standard for them?</p> <p>These are all proprietary systems but the manufacturers do not address the grading requirements for any of these systems. The requirements were developed using the knowledge obtained from how the systems operate and the requirements of each system. If another system is developed we will review it just as we have these systems.</p> <p>Why 20 ft? This is way outside the shy distance. This is being violated on Bangeter Hwy., I-15 at overhead sign installations, and for bridges that pass over roadways where their columns need to be protected. At 20ft this is outside the most conservative clear zone by 2 ft for 40 mph or less. And outside the clearzone for 10:1 slopes for speeds at 40 to 55 mph.</p> <p>This reference has been removed.</p> <p>Table 1, Why isn't this table based on clearzone divided by L sub R from the point where the edge of pavement is intersected as is defined in the roadside design guide? (typ)</p> <p>Table has been revised to match Table 1 of other CC drawings..</p> | Barry, Mark, Robert Miles & Glenn Schulte reviewed comments. Glenn responded to each comment | |
| | | | Response: Agreed to by all reviewers are in red after each comment. | | A |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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MEDIAN INSTALLATION

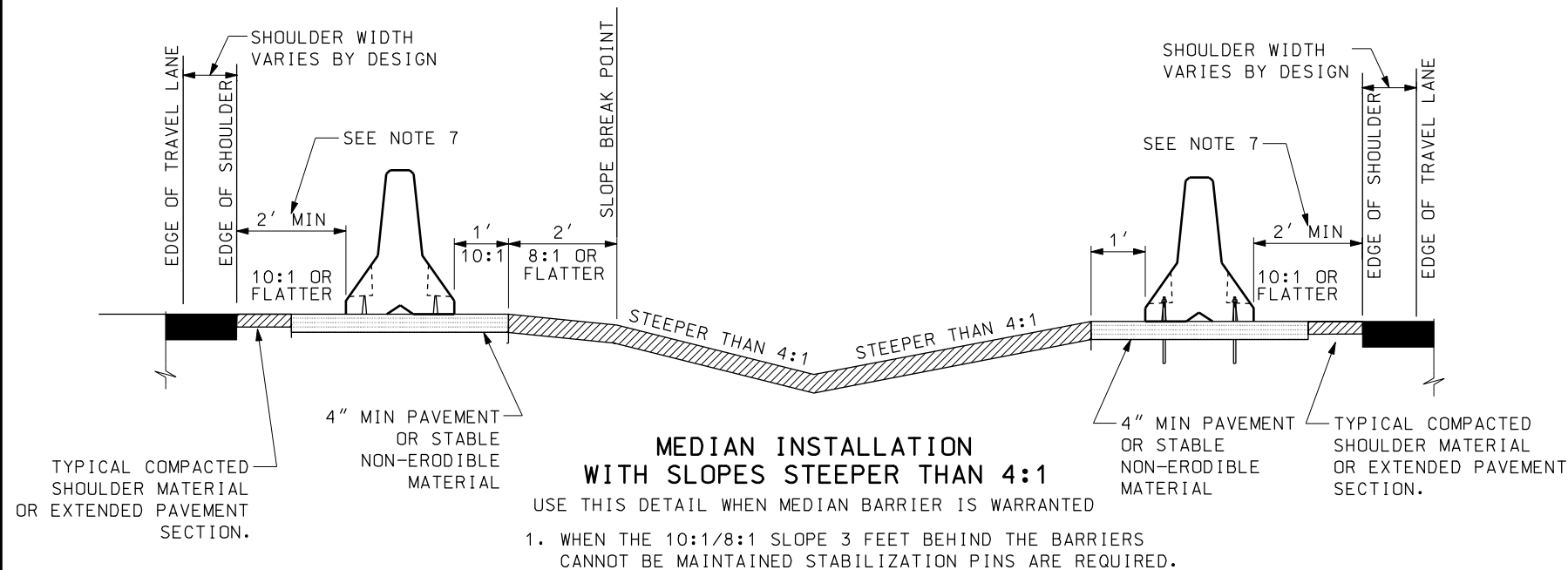
USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. NO STABILIZATION PINS ARE REQUIRED WHEN BARRIER FACE IS GREATER THAN 12 FEET FROM TRAVEL LANE.
2. INSTALL STABILIZATION PINS WHEN BARRIER FACE IS 12 FEET OR LESS FROM TRAVEL LANE.

MEDIAN INSTALLATION W/ OFFSET ROADWAY

USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. WHEN THE 10:1/8:1 SLOPE 3 FEET BEHIND THE BARRIERS CANNOT BE MAINTAINED STABILIZATION PINS ARE REQUIRED.



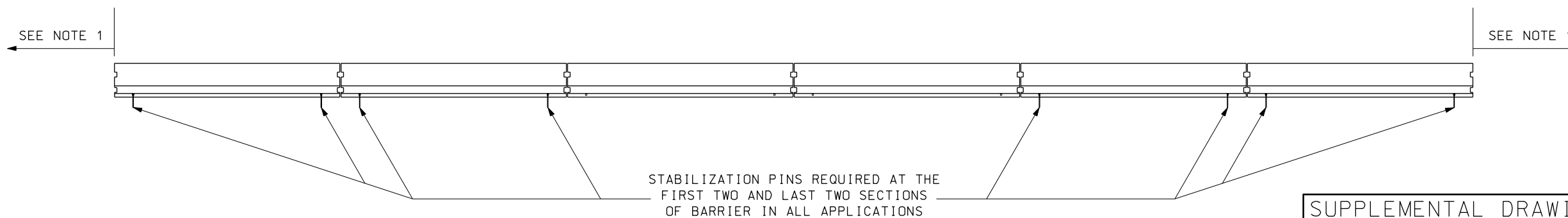
MEDIAN INSTALLATION WITH SLOPES STEEPER THAN 4:1

USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. WHEN THE 10:1/8:1 SLOPE 3 FEET BEHIND THE BARRIERS CANNOT BE MAINTAINED STABILIZATION PINS ARE REQUIRED.

NOTES:

1. USE APPROPRIATE FLARE RATE AS SUGGESTED IN THE ROADSIDE DESIGN GUIDE, CURRENT EDITION, FOR RIGID BARRIER SYSTEMS. WHEN BARRIER IS PLACED WITH A FLARE. REFER TO STD DWG BA 1E, NOTE 4, FOR APPROPRIATE END TREATMENT OR CRASH CUSHION REQUIREMENTS.
2. PLACE BARRIER ON A 4" PAVED OR STABLE NON-ERODIBLE SURFACE.
3. DO NOT PLACE BARRIER ON TOP OF ANY CURBING.
4. PIN ALL BARRIER SECTIONS TOGETHER AT CONNECTION LOOPS.
5. PRE-DRILL A 1" DIA. HOLE THROUGH PAVED SURFACE PRIOR TO INSTALLING THE STABILIZATION PIN.
6. PLACE AN ADEQUATE AMOUNT OF SILICON ADHESIVE ON THE BOTTOM WASHER OF THE CONNECTION PIN BEFORE INSERTING, TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.
7. WHEN ROADWAY DESIGN REQUIRES 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN OFFSET IS OPTIONAL.



SUPPLEMENTAL DRAWING

| REVISIONS | | DATE | NO. | APPR. | REMARKS |
|-----------|----------|------|-----|-------|--|
| 1 | 10-30-08 | | | | MEE ADDED NOTE 7 AND SEVERAL EDITORIAL UPDATES CHANGED NON-PERMEABLE TO STABLE NON-ERODIBLE. ADDED 'OR EXTENDED PAVEMENT SECTION TO COMPACTED SHOULDER CALLOUTS. |

| | | | |
|--|--|-------------|------|
| UTAH DEPARTMENT OF TRANSPORTATION | | OCT.30.2008 | DATE |
| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | | OCT.30.2008 | DATE |
| RECOMMENDED FOR APPROVAL | | | |
| CHAIRMAN STANDARDS COMMITTEE | | | |
| APPROVED | | | |
| DEPUTY DIRECTOR | | | |

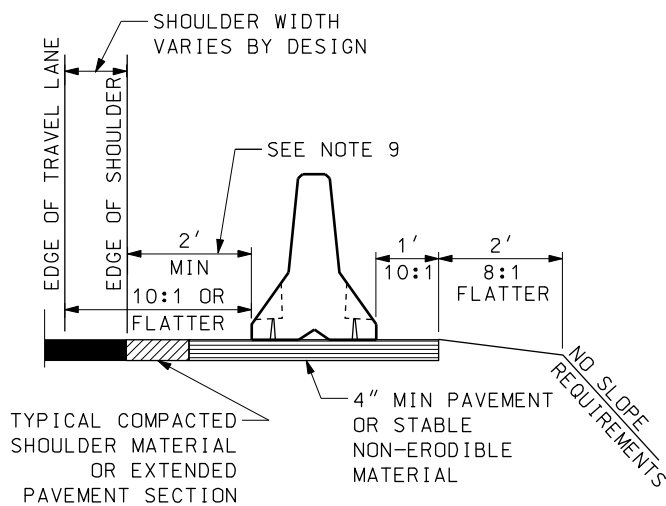
PRECAST CONCRETE
FULL SECTION MEDIAN
INSTALLATION
(NEW JERSEY SHAPE)

STANDARD DRAWING TITLE

STD DWG
BA 1D

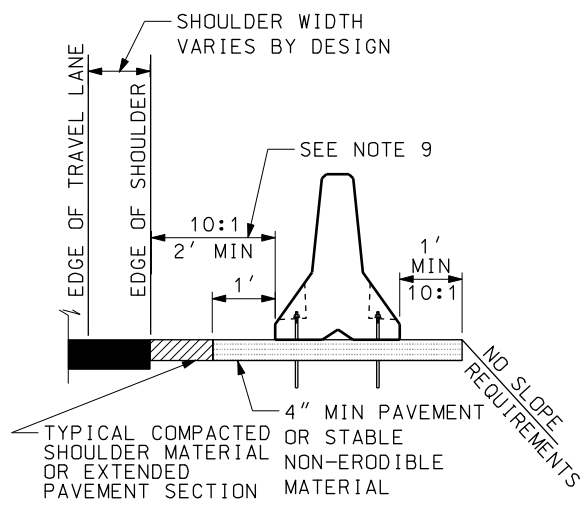
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56

15-OCT-2008 D:_File_01\Standard\Spec\Section\Standards Committee\Meeting\15a\2008\5-October-20_08\kg_Incoming\9401E.dgn



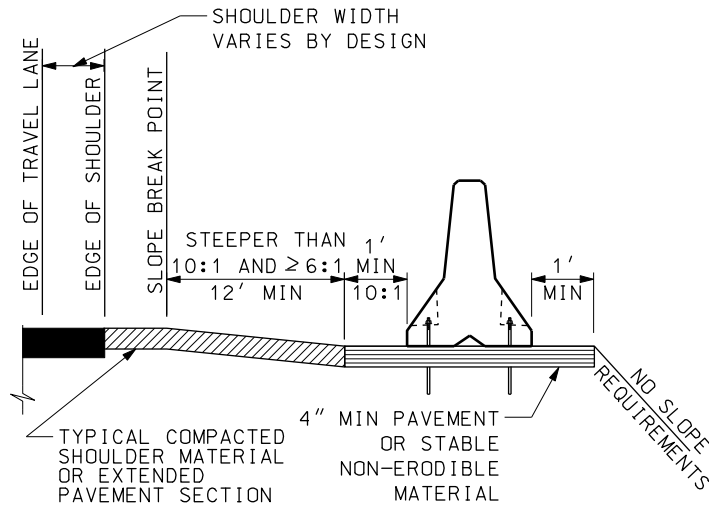
SHOULDER INSTALLATION
OPTION 1

NO STABILIZATION PINS REQUIRED



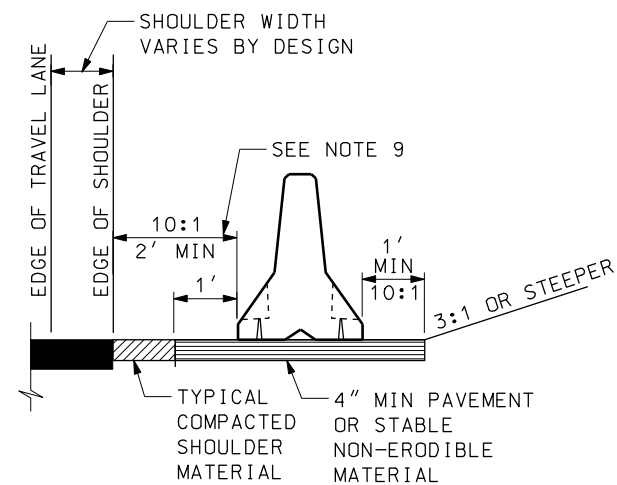
SHOULDER INSTALLATION
OPTION 2

STABILIZATION PINS REQUIRED



SHOULDER INSTALLATION
OPTION 3

STABILIZATION PINS REQUIRED



SHOULDER INSTALLATION WITH
3:1 OR STEEPER BACKSLOPE

NO STABILIZATION PINS REQUIRED

FORMULAS FOR LENGTH OF NEED
CALCULATIONS BURIED
IN TERMINAL SECTION ONLY

BACKSLOPE STEEPER THAN 3:1

$$LON = FLR \times D1$$

BACKSLOPE 3:1 TO A MINIMUM 4:1

$$\geq 50 \text{ MPH } "LON" = 450 - (15 \times D2)$$

$$\leq 45 \text{ MPH } "LON" = 250 - (15 \times D2)$$

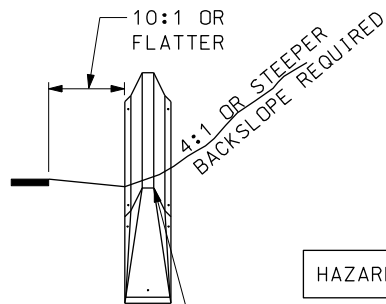
LON: LENGTH OF NEED

FLR: BARRIER FLARE RATE

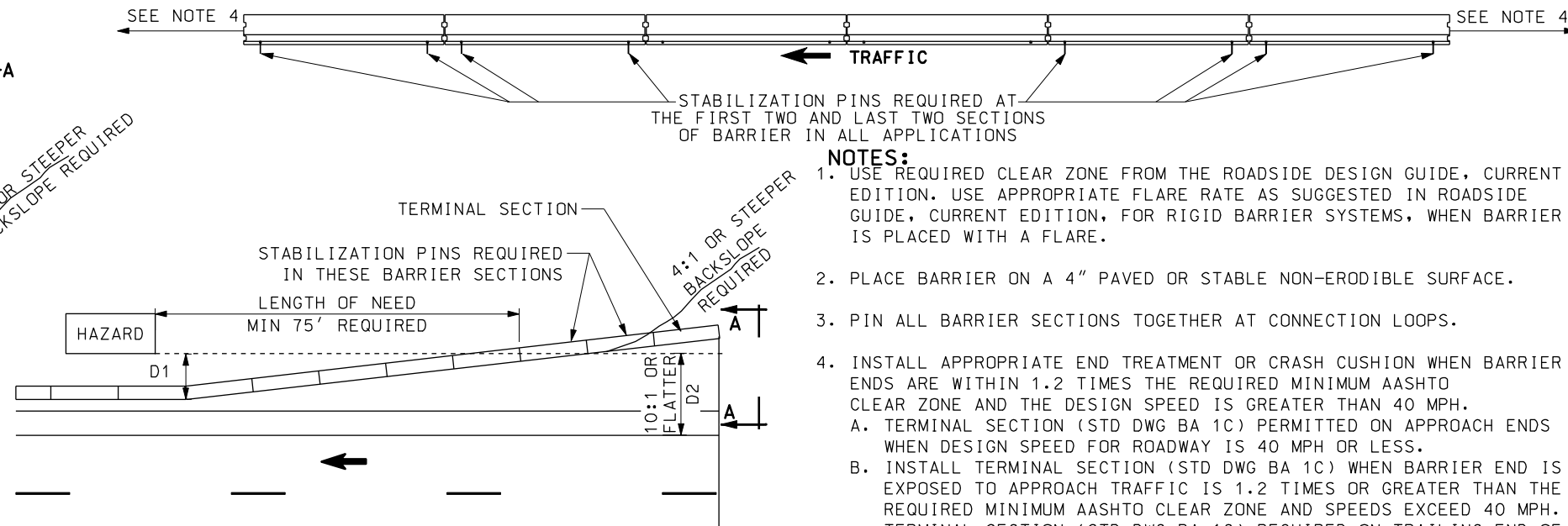
D1: DISTANCE FROM FACE OF BARRIER
TO FACE OF HAZARD OR DITCH BOTTOM

D2: DISTANCE FROM EDGE OF TRAVEL LANE
TO FACE OF HAZARD OR DITCH BOTTOM

SECTION A-A

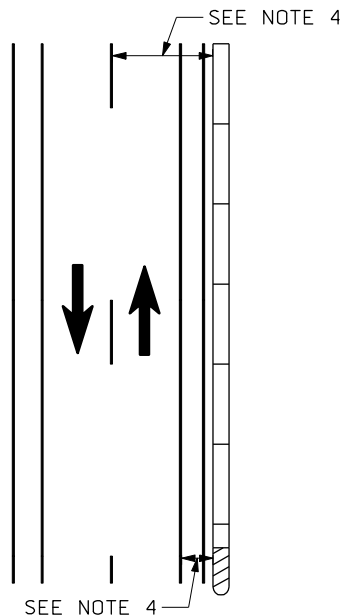


MINIMUM OF 12" COVER
AT THE CONNECTION
POINT WITH THE
STANDARD SECTION

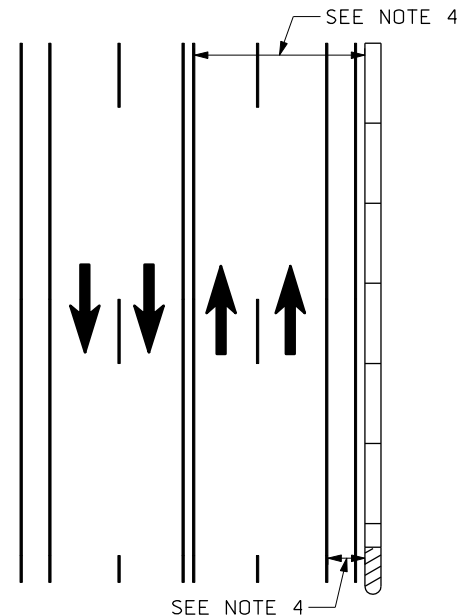


NOTES:

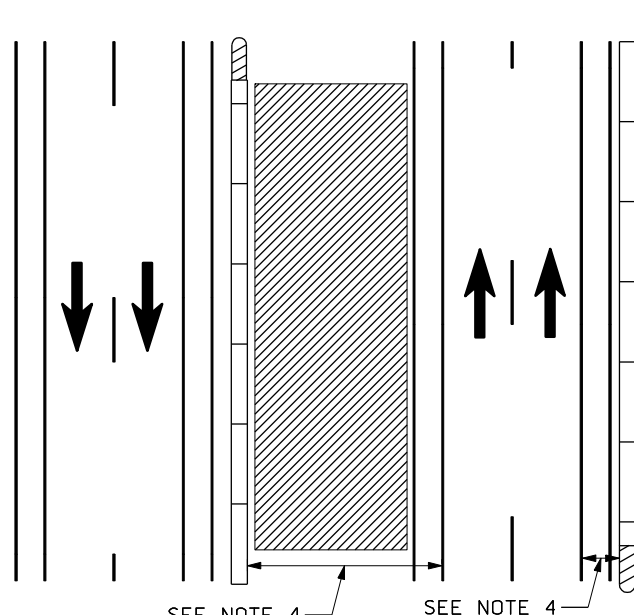
1. USE REQUIRED CLEAR ZONE FROM THE ROADSIDE DESIGN GUIDE, CURRENT EDITION. USE APPROPRIATE FLARE RATE AS SUGGESTED IN ROADSIDE GUIDE, CURRENT EDITION, FOR RIGID BARRIER SYSTEMS, WHEN BARRIER IS PLACED WITH A FLARE.
2. PLACE BARRIER ON A 4" PAVED OR STABLE NON-ERODIBLE SURFACE.
3. PIN ALL BARRIER SECTIONS TOGETHER AT CONNECTION LOOPS.
4. INSTALL APPROPRIATE END TREATMENT OR CRASH CUSHION WHEN BARRIER ENDS ARE WITHIN 1.2 TIMES THE REQUIRED MINIMUM AASHTO CLEAR ZONE AND THE DESIGN SPEED IS GREATER THAN 40 MPH.
 - A. TERMINAL SECTION (STD DWG BA 1C) PERMITTED ON APPROACH ENDS WHEN DESIGN SPEED FOR ROADWAY IS 40 MPH OR LESS.
 - B. INSTALL TERMINAL SECTION (STD DWG BA 1C) WHEN BARRIER END IS EXPOSED TO APPROACH TRAFFIC IS 1.2 TIMES OR GREATER THAN THE REQUIRED MINIMUM AASHTO CLEAR ZONE AND SPEEDS EXCEED 40 MPH. TERMINAL SECTION (STD DWG BA 1C) REQUIRED ON TRAILING END OF BARRIER ON DIVIDED ROADWAYS. USE OF TERMINAL SECTION (BA 1C) ON NON-DIVIDED ROADWAYS WHEN AN END TREATMENT OR CRASH CUSHION NOT REQUIRED.
 - C. CHOOSE APPROPRIATE END TREATMENT OR CRASH CUSHION TYPE USING STD DWG CC SERIES AND CURRENT EDITION OF GUIDELINES FOR CRASH CUSHIONS AND END TREATMENTS
5. THE CONCRETE BARRIER DESIGN ALLOWS FOR A 3' OUTWARD LATERAL MOVEMENT IF THE BARRIER IS STRUCK. STABILIZATION PINS ARE NOT REQUIRED WHEN USED ON A SHOULDER APPLICATION AND THE REQUIRED SLOPE OF 8:1 OR FLATTER EXIST 3' BEHIND THE BARRIER. USE STABILIZATION PINS WHEN THE SLOPES ARE STEEPER THAN 8:1 AND WITHIN 3' OF THE BARRIER BACKSIDE.
6. PRE-DRILL A 1" DIA. HOLE THROUGH PAVED SURFACE PRIOR TO INSTALLING THE STABILIZATION PIN.
7. DO NOT PLACE BARRIER ON TOP OF ANY CURBING, 10' OFFSET FROM FACE OF CURB REQUIRED.
8. DO NOT OVERLAY ANY MATERIAL PAST THE FIRST BREAK POINT ON THE BARRIER. THE FIRST BREAK POINT IS 3" FROM THE BOTTOM OF THE BARRIER.
9. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



TWO LANE/TWO WAY



MULTI-LANE ARTERIAL



MULTI-LANE ARTERIAL WITH
TRAVERSABLE MEDIAN

SUPPLEMENTAL DRAWING

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE COUNTY

RECOMMENDED FOR APPROVAL
CHAIRMAN STANDARD COMMITTEE
OCT.30.2008
DATE

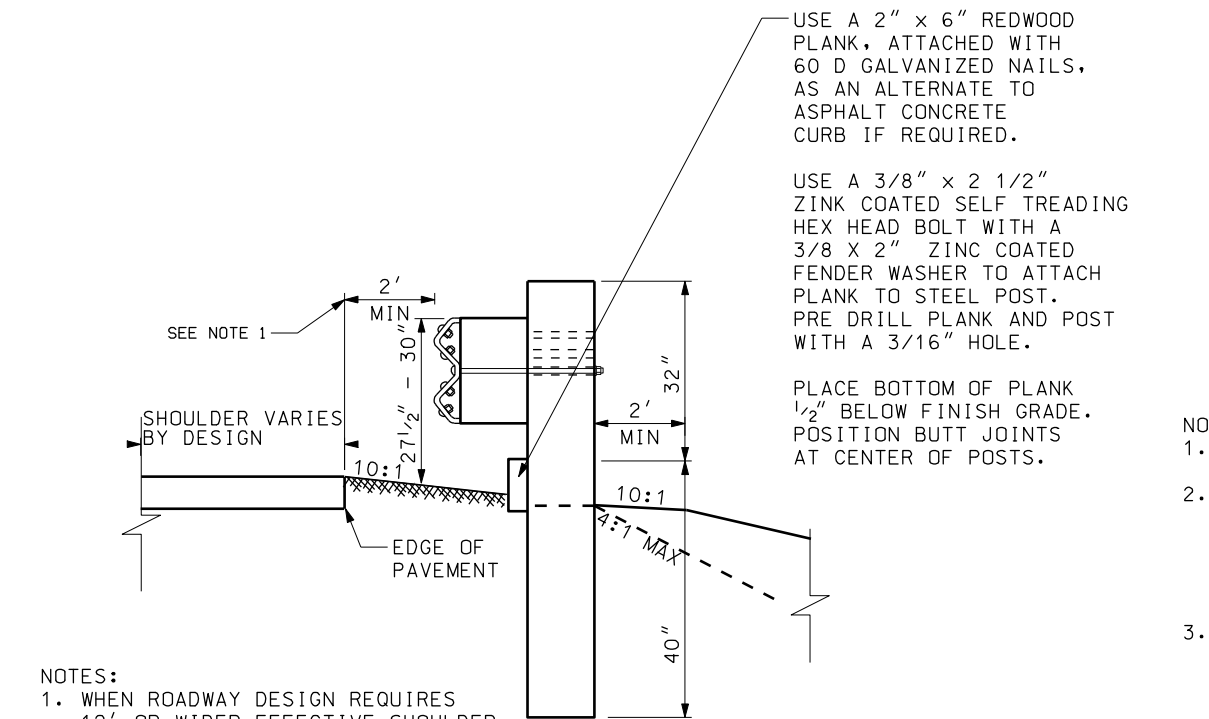
DEPUTY DIRECTOR
OCT.30.2008
DATE

PRECAST CONCRETE
FULL SECTION
SHOULDER
APPLICATIONS
(NEW JERSEY SHAPE)

STD DWG
BA 1E

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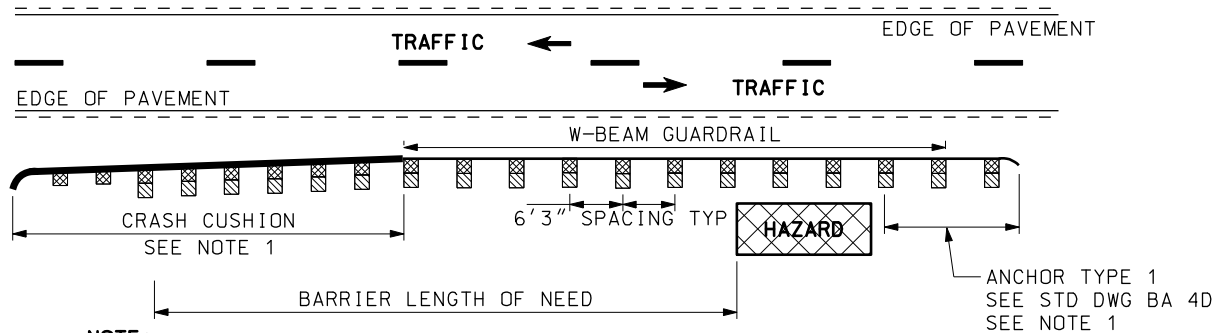
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NOTES:

1. WHEN ROADWAY DESIGN REQUIRES 12' OR WIDER EFFECTIVE SHOULDER, THE 2' MIN OFFSET IS OPTIONAL. (PLACE AS FAR OFF PAVEMENT EDGE AS PRACTICAL)
2. USE TOP HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE PAVEMENT. USE BOTTOM HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH HOT MIX ASPHALT (HMA).

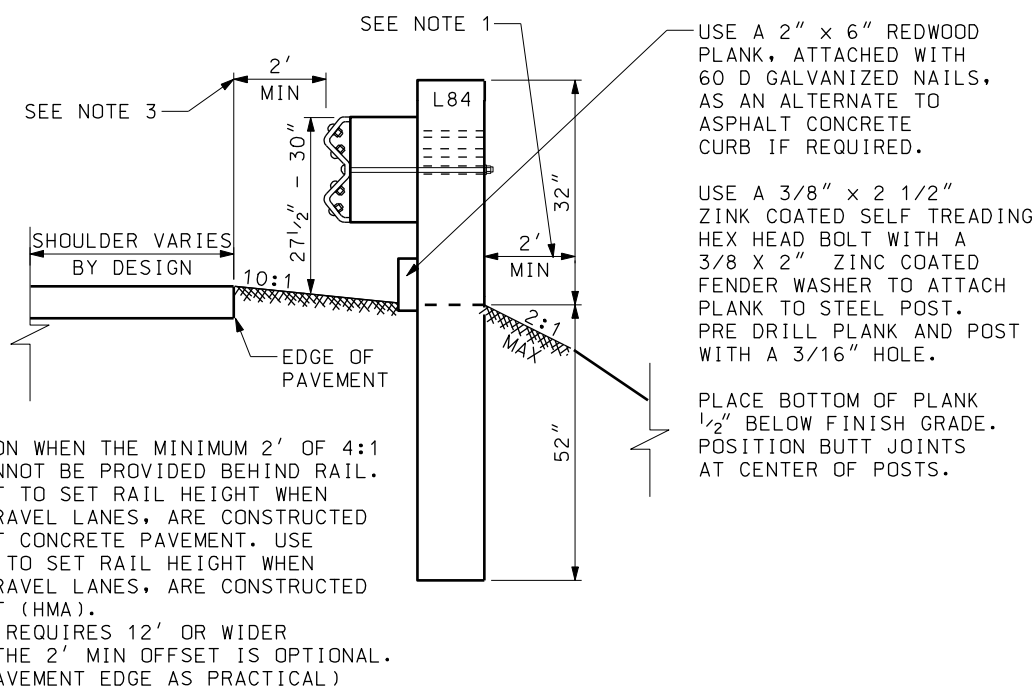
INITIAL INSTALLATION
USE 72" LONG POSTS



NOTE:

1. CRASH CUSHION REQUIRED WHEN BARRIER END IS WITHIN 1.2 TIMES AASHTO ROADSIDE DESIGN GUIDE CLEAR ZONE.

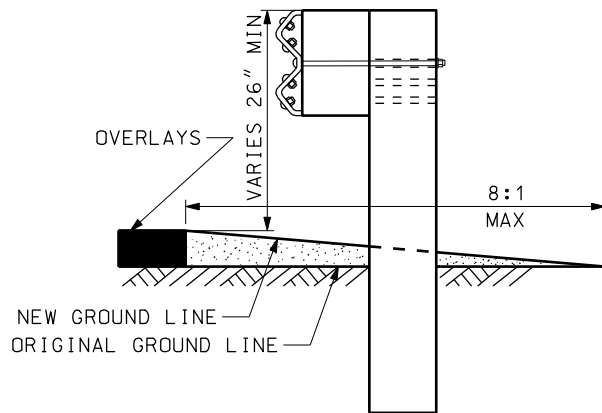
TYPICAL INSTALLATION



NOTES:

1. USE THIS INSTALLATION WHEN THE MINIMUM 2' OF 4:1 OR FLATTER SLOPE CANNOT BE PROVIDED BEHIND RAIL.
2. USE TOP HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE PAVEMENT. USE BOTTOM HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH HOT MIX ASPHALT (HMA).
3. WHEN ROADWAY DESIGN REQUIRES 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN OFFSET IS OPTIONAL. (PLACE AS FAR OFF PAVEMENT EDGE AS PRACTICAL)

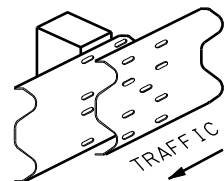
INITIAL LONG POST INSTALLATION
USE 84" LONG POSTS



NOTES:

1. RAISE RAIL ELEMENT WHEN OVERLAY IS REQUIRED.
2. RAISED RAIL ELEMENT WILL ACCOMMODATE 6" TO 8" OF OVERLAY MATERIAL.
3. SLOPE OF SHOULDER INTO FACE OF RAIL NOT TO EXCEED 8:1.
4. RAISE REDWOOD PLANKING WHEN REQUIRED.
5. RAISING THE RAIL ELEMENT TO MAXIMUM HEIGHT REQUIRED BEFORE THE MINIMUM HEIGHT OF THE RAIL ELEMENT ABOVE GROUND LEVEL CAN BE REDUCED TO THE MINIMUM OF 26".

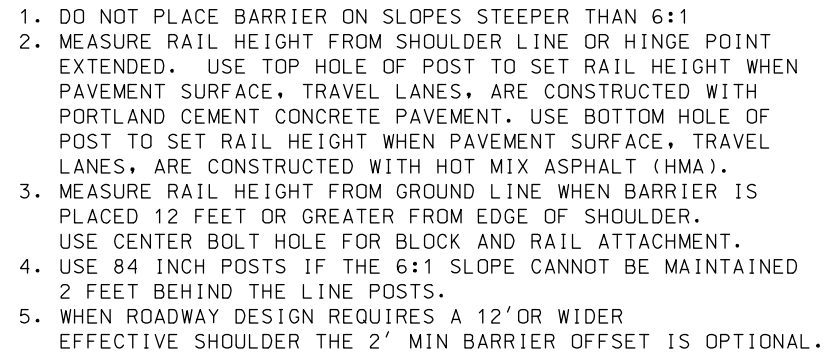
RAIL ELEMENT RAISED



SPLICE LAP DETAIL

SUPPLEMENTAL DRAWING

| REVISIONS | | NO. | DATE | APPROVAL | REMARKS |
|---|----------|-----|---|----------|---------|
| 1 | 10-30-08 | MEE | NEW DRAWING STD DWG BA 4E SPLIT INTO BA 4E1 AND BA 4E2. | | |
| UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALE LANE RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE APPROVED DEPUTY DIRECTOR | | | | | |
| W-BEAM GUARDRAIL INSTALLATIONS | | | | | |
| STANDARD DRAWING TITLE | | | | | |
| STD DWG BA 4E1 | | | | | |
| 15-OCT-2008 Doc Page 17 | | | | | |



OPTION 2: PLACE FACE OF ASPHALT
CONCRETE CURB BEHIND
FACE OF RAIL. 2" MAXIMUM
CURB HEIGHT WHEN USED IN
FRONT OF POST.

1. USE TOP HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE PAVEMENT. USE BOTTOM HOLE OF POST TO SET RAIL HEIGHT WHEN PAVEMENT SURFACE, TRAVEL LANES, ARE CONSTRUCTED WITH HOT MIX ASPHALT (HMA).
2. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL. (PLACE AS FAR OFF PAVEMENT AS PRACTICAL)

27 1/2"

SHOULDER VARIES BY DESIGN

4"

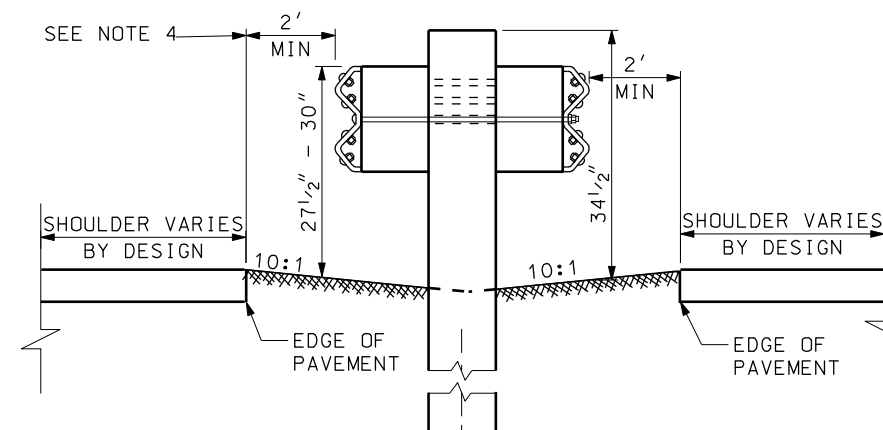
10:1

2' MIN

MODIFIED CURB & GUTTER

VARIES BASED ON CURB HEIGHT

INSTALLATION W/MODIFIED
TYPE B1 CURB & GUTTER
USE 72" LONG POST



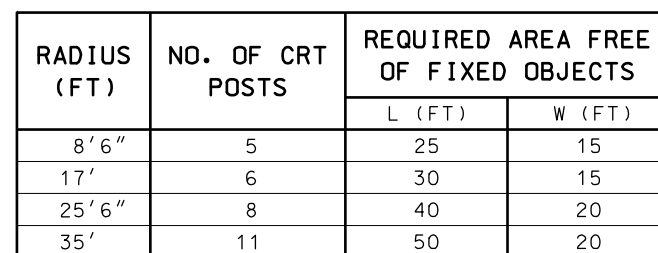
1. IF MEDIAN BARRIER IS PLACED 10' OR GREATER FROM TRAVEL LANES USE TOP HOLE TO MOUNT BLOCK & RAIL.
2. RAISE BOTH RAIL ELEMENTS AS PER RAIL ELEMENT RAISED DETAIL, WHEN REQUIRED.
3. ATTACH REQUIRED DELINEATION ON THE POST.
4. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL. (PLACE AS FAR OFF PAVEMENT AS PRACTICAL)

SUPPLEMENTAL DRAWING

| | |
|--|------|
| UTAH DEPARTMENT OF TRANSPORTATION | |
| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| SALT LAKE COUNTY, UTAH | |
| RECOMMENDED FOR APPROVAL | |
| CHAIRMAN STANDARDS COMMITTEE | |
| APPROVED | |
| DEPUTY DIRECTOR | |
| OCT. 30, 2008 | DATE |
| OCT. 30, 2008 | DATE |

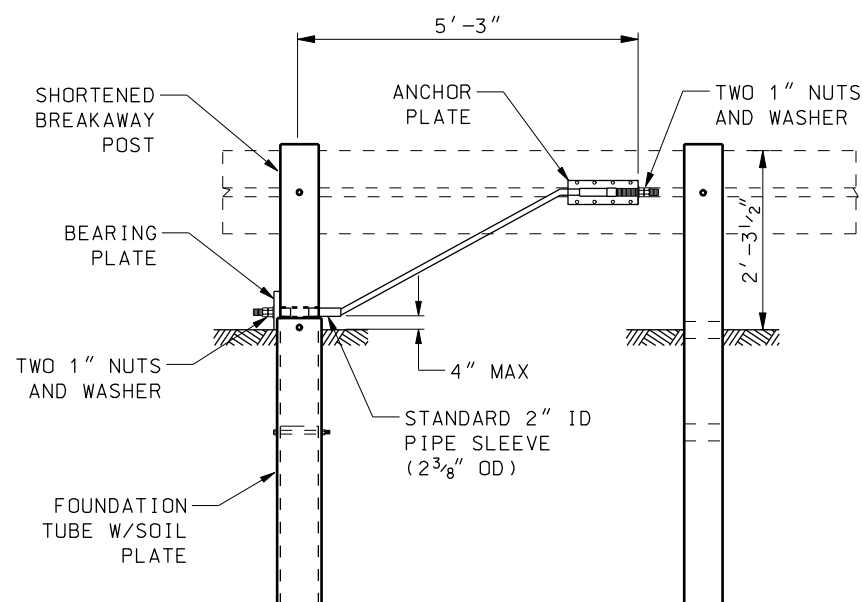
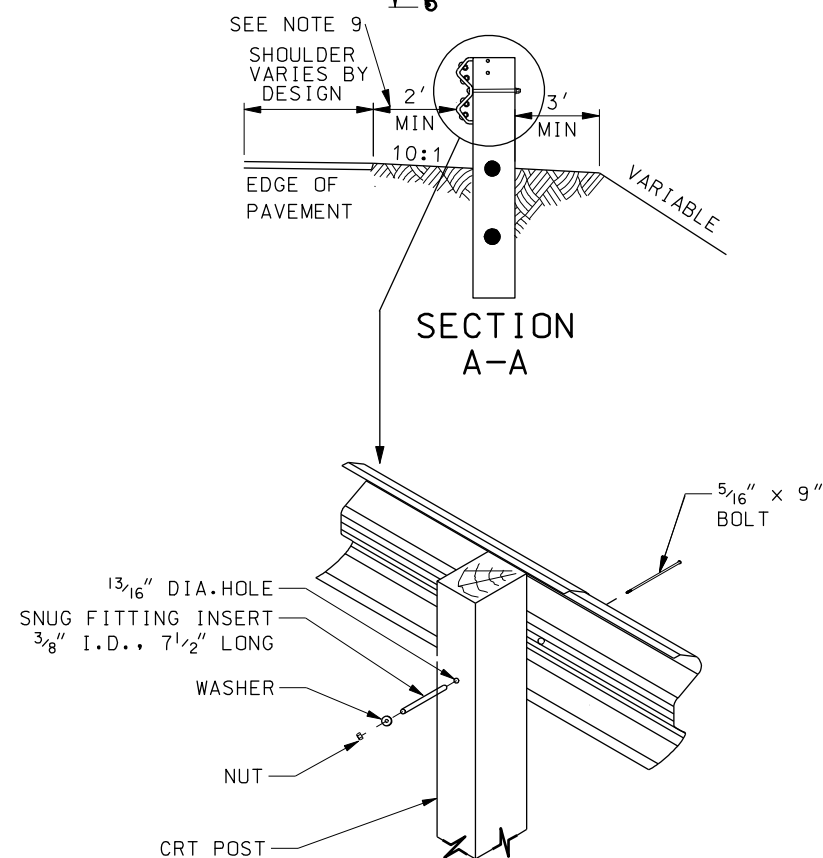
STANDARD DRAWING TITLE

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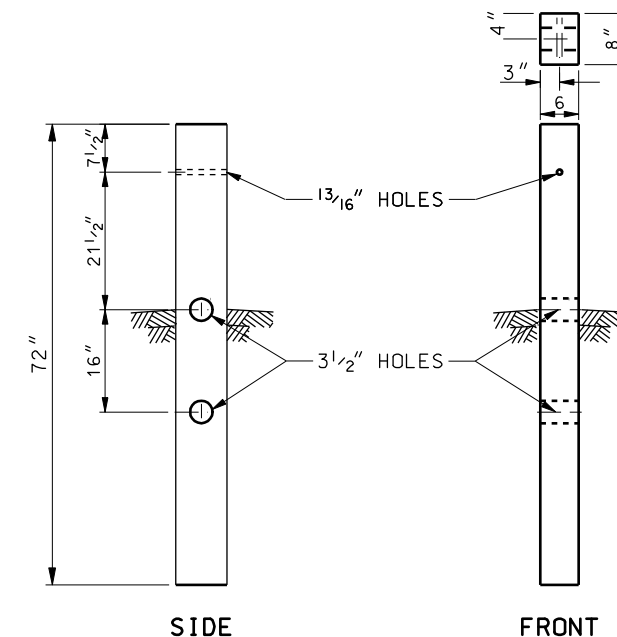


NOTES:

1. LIST RADIUS REQUIREMENT FOR EACH LOCATION IN THE PROJECT PLANS AND SUMMARY SHEET.
2. SHOP BEND RADIUS ELEMENTS. FIELD BENDING IS NOT PERMITTED.
3. RECOVERY AREA BEHIND THE GUARDRAIL TO BE MAINTAINED FREE OF FIXED OBJECTS.
4. MAINTAIN 10:1 SLOPE IN FRONT OF CURVED SECTION.
5. USE END TREATMENTS, TYPE "G" OR "H" ON INTERSECTING ROADWAYS OPEN TO THE GENERAL PUBLIC. USE ANCHOR TYPE I (REFER TO STD DWG BA 4D) ON BUSINESS/RESIDENTIAL DRIVEWAYS, OR RESTRICTED/LIMITED ENTRY ROADWAYS.
6. DO NOT ATTACH DIRECTLY TO W-BEAM GUARDRAIL TRANSITION, STD DWG BA 4B, INSTALL 12 $\frac{1}{2}$ FEET OF TYPICAL W-BEAM GUARDRAIL AT END OF TRANSITION PRIOR TO INSTALLING CURVED GUARDRAIL ANCHOR.
7. USE ANCHOR TYPE I WHEN OPPOSING TRAFFIC IS 1.2 TIMES FROM THE REQUIRED CLEAR ZONE.
8. USE NOMINAL DIMENSIONS FOR ALL TIMBER.
9. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



CURVED GUARDRAIL
ANCHOR
(REFER TO STD DWG BA 4D)



CONTROLLED RELEASE TERMINAL
(CRT) POST
DRAWING SEE NOTE 7

[illegible]

~~UTAH DEPARTMENT OF TRANSPORTATION~~
~~STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION~~
~~SALT LAKE COUNTY DIVISION~~

~~RECOMMENDED FOR APPROVAL~~ *[Signature]* ~~OCT. 30, 2008~~

~~CHAIRMAN STANDARDS COMMITTEE~~ *[Signature]* ~~DATE~~

~~APPROVED~~

~~DEPUTY DIRECTOR~~ *[Signature]* ~~OCT. 30, 2008~~

~~DATE~~

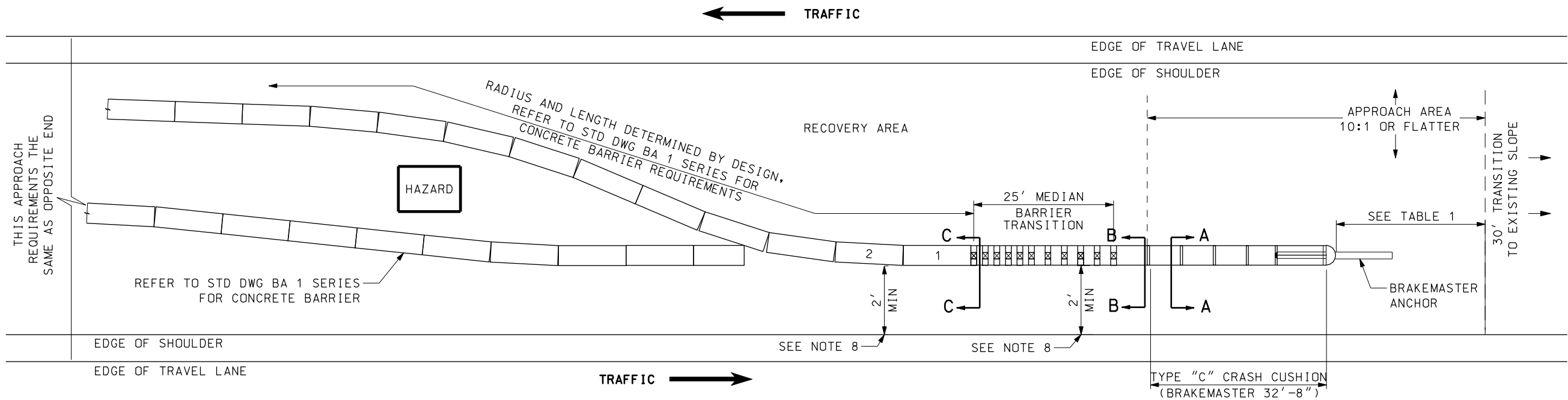
W-BEAM GUARDRAIL CURVE DETAILS

STANDARD DRAWING TITLE

STD DWG
BA 4L

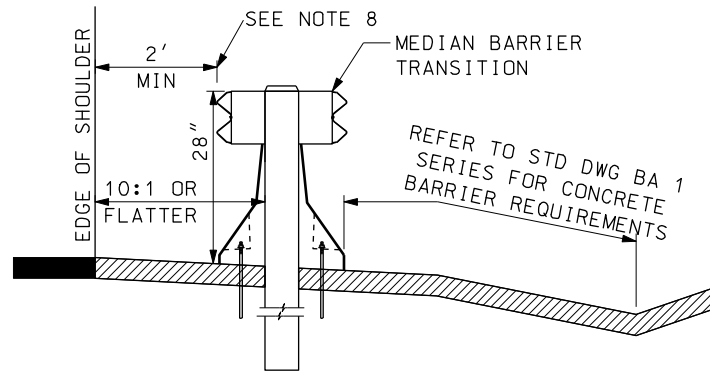
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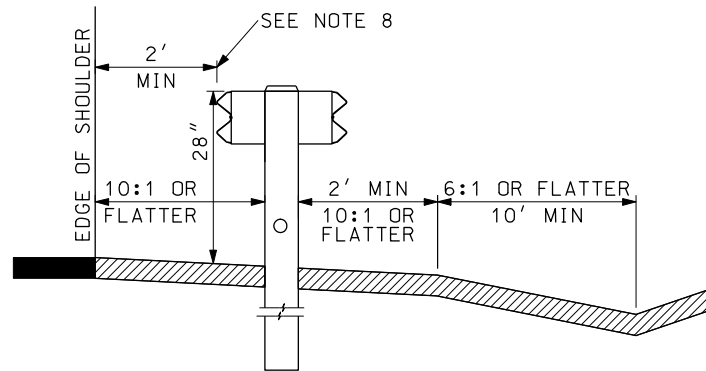


TRAFFIC →

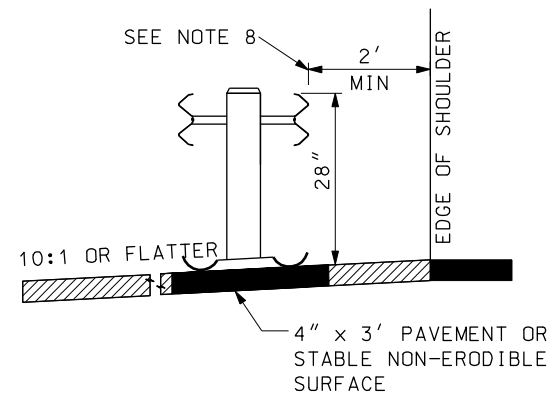
CONCRETE BARRIER INSTALLATION DETAIL



SECTION C-C
PIN BARRIER SECTION 1 AND 2
WITH STABILIZATION PINS



SECTION B-B
DRILL 2" HOLES IN MEDIAN BARRIER TRANSITION
OR MEDIAN BARRIER AS SPECIFIED BY MANUFACTURER



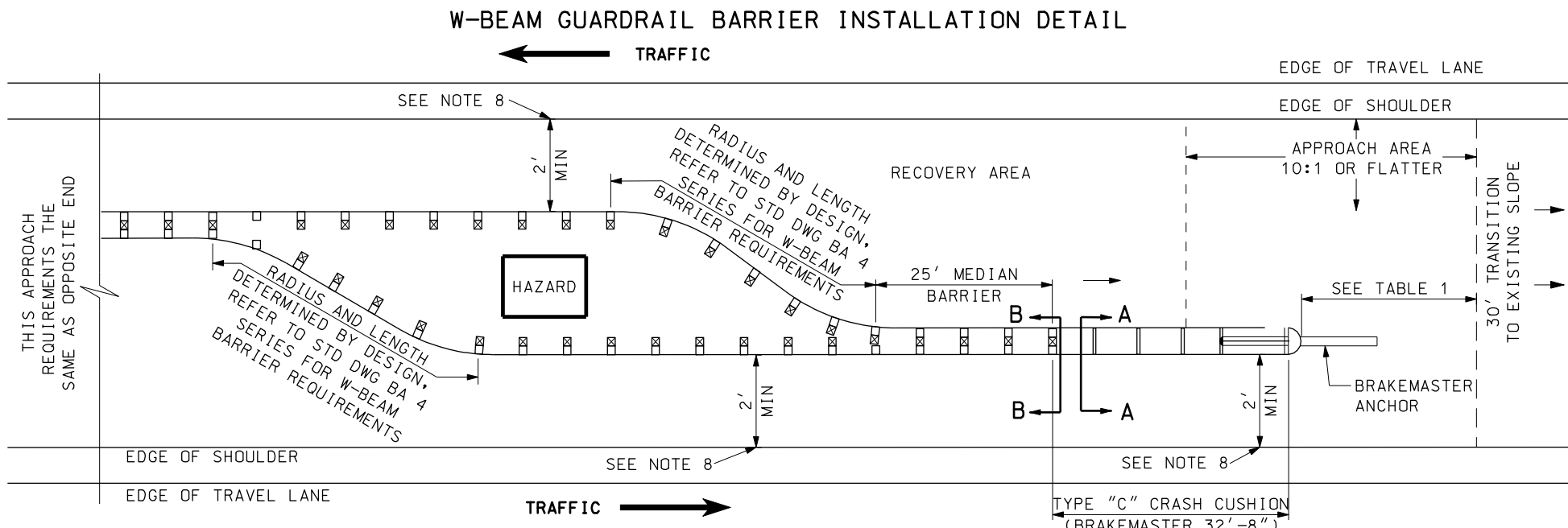
SECTION A-A

| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

NOTES:

1. THE BRAKEMASTER, MANUFACTURED BY ENERGY ABSORPTION SYSTEM. SEE UDOT'S GUIDELINES FOR SPECIFIC SYSTEM DETAILS.
2. INSTALL SYSTEMS AS PER UDOT'S AND MANUFACTURER'S SPECIFICATIONS.
3. HAVE SHOP DRAWING AVAILABLE ON SITE FOR REFERENCE DURING INSTALLATION.
4. USE 4" STABLE NON-ERODIBLE OR PAVED SURFACE FOR BRAKEMASTER SYSTEMS.
5. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
6. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA. SIGNS OR POLES PLACED IN THE RECOVERY AREA WILL BE BREAKAWAY AND BE A MINIMUM 10 FEET FROM SYSTEM RAIL ELEMENTS.
7. INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
8. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

SUPPLEMENTAL DRAWING



W-BEAM GUARDRAIL BARRIER INSTALLATION DETAIL

| REVISIONS | | REMARKS |
|-----------|----------|--|
| 1 | 10-30-08 | MEE ADDED NOTE 8 AND SEVERAL EDITORIAL UPDATES. REVISED TABLE 1. CHANGED NON-PERMEABLE TO STABLE NON-ERODIBLE. |

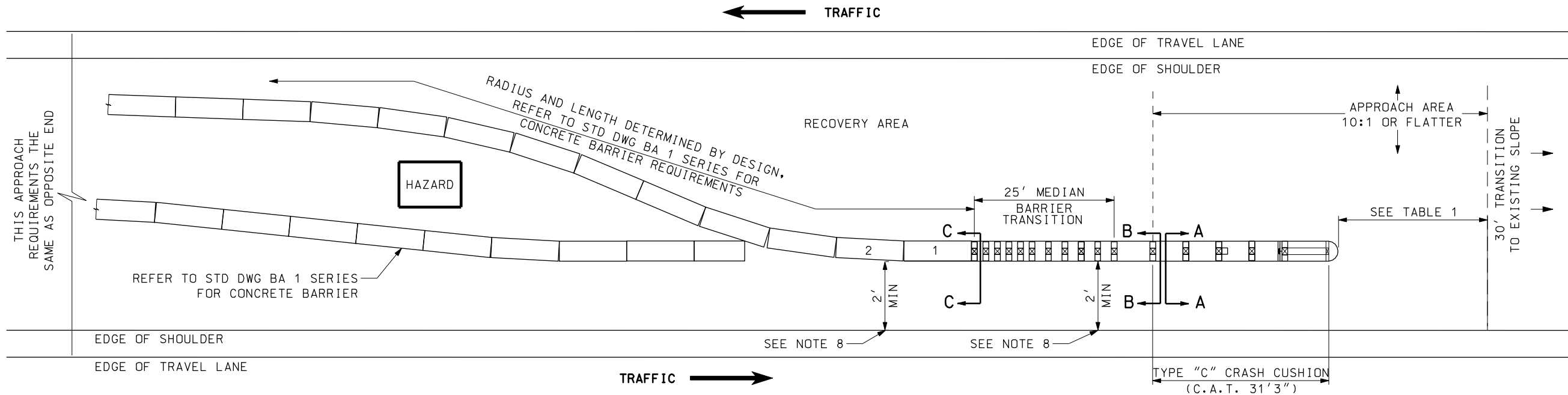
| UTAH DEPARTMENT OF TRANSPORTATION | |
|--|---------------------|
| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| SALT LAKE COUNTY | |
| RECOMMENDED FOR APPROVAL | |
| CHAIRMAN | STANDARDS COMMITTEE |
| APPROVED | |
| DEPUTY | DIRECTOR |
| OCT, 30, 2008 | DATE |
| OCT, 30, 2008 | DATE |

GRADING AND
PLACEMENT DETAILS
CRASH CUSHION
TYPE C
BRAKEMASTER

STD DWG

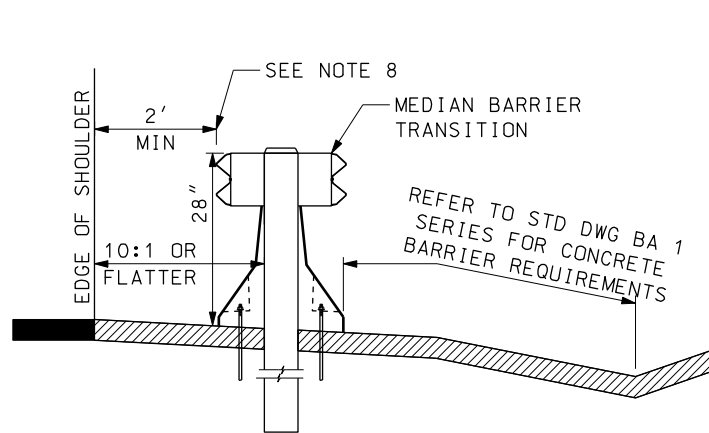
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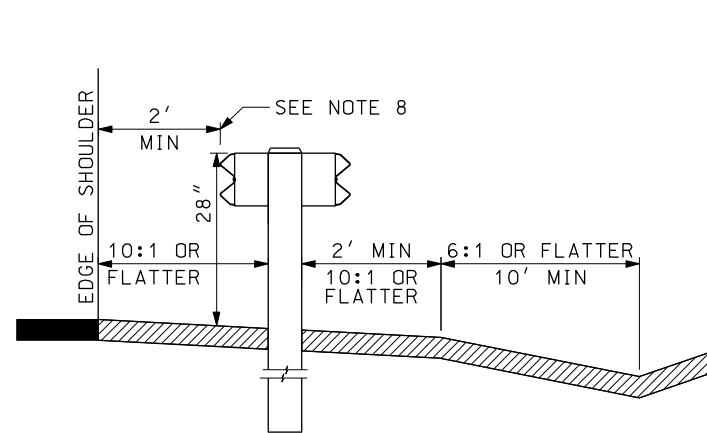


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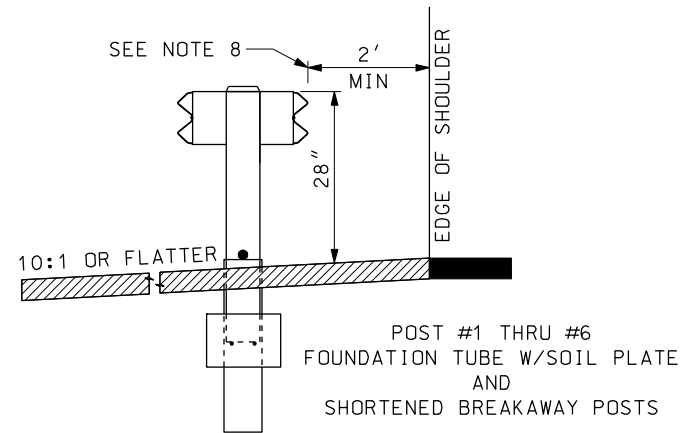
CONCRETE BARRIER INSTALLATION DETAIL



SECTION C-C
PIN BARRIER SECTION 1 AND 2
WITH STABILIZATION PINS



SECTION B-B



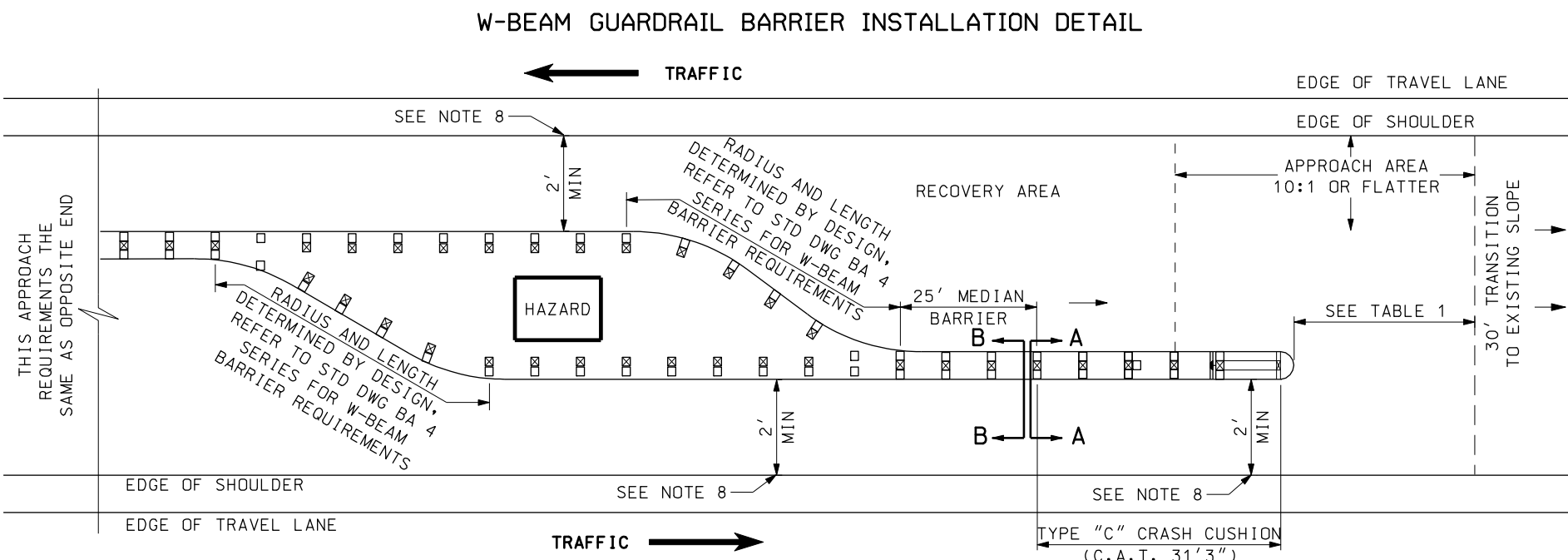
SECTION A-A

| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

NOTES:

1. THE C.A.T., MANUFACTURED BY TRINITY INDUSTRIES. SEE UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR SPECIFIC SYSTEM DETAILS.
2. INSTALL SYSTEMS AS PER UDOT'S AND MANUFACTURER'S SPECIFICATIONS.
3. HAVE SHOP DRAWING AVAILABLE ON SITE FOR REFERENCE DURING INSTALLATION.
4. USE GRADED AND COMPACTED SURFACE FOR C.A.T. SYSTEMS.
5. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
6. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA. SIGNS OR POLES PLACED IN THE RECOVERY AREA WILL BE BREAKAWAY AND BE A MINIMUM 10 FEET FROM SYSTEM RAIL ELEMENTS.
7. INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
8. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

SUPPLEMENTAL DRAWING



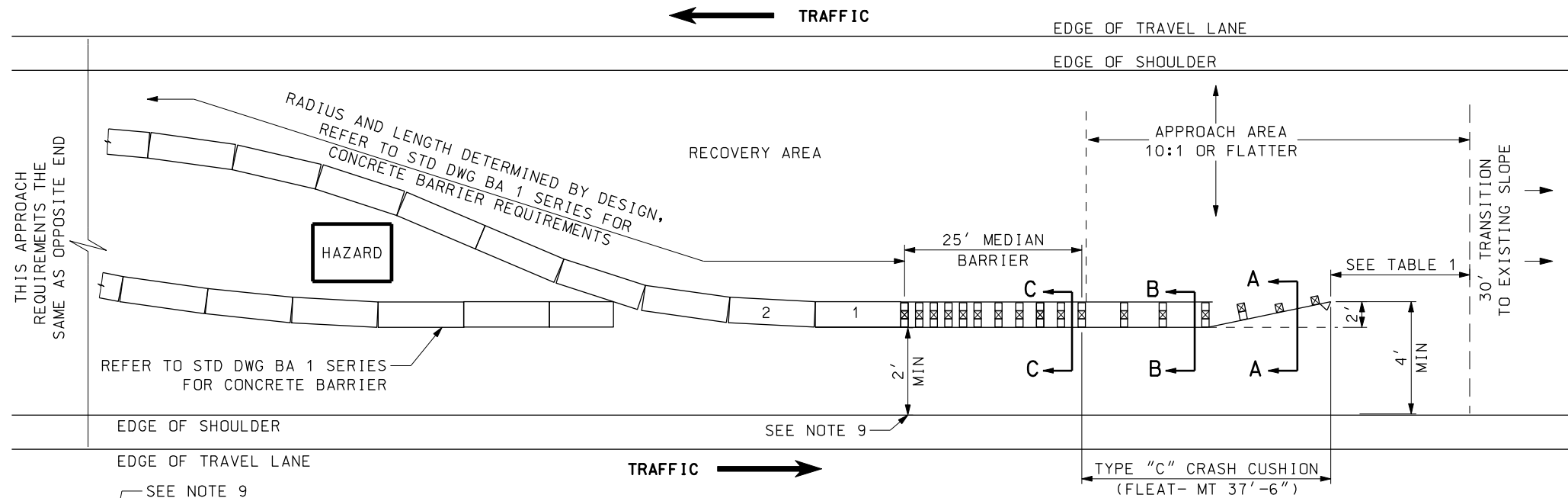
W-BEAM GUARDRAIL BARRIER INSTALLATION DETAIL

| REVISIONS | | REMARKS |
|-----------|----------|--|
| 1 | 10-30-08 | MEE ADDED NOTE 8 AND SEVERAL EDITORIAL UPDATES. REVISED TABLE 1. |

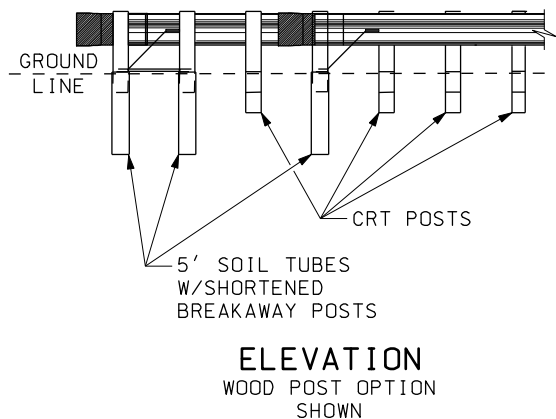
| UTAH DEPARTMENT OF TRANSPORTATION | |
|--|---------------------|
| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| SALT LAKE COUNTY | |
| RECOMMENDED FOR APPROVAL | |
| CHAIRMAN | STANDARDS COMMITTEE |
| APPROVED | DATE |
| DEPUTY DIRECTOR | DATE |
| | OCT.30,2008 |
| | OCT.30,2008 |

| GRADING AND PLACEMENT DETAILS | |
|-------------------------------|------|
| CRASH CUSHION TYPE C | |
| C.A.T. | |
| STD DWG | Doc |
| CC 5B | Page |
| | 1 |

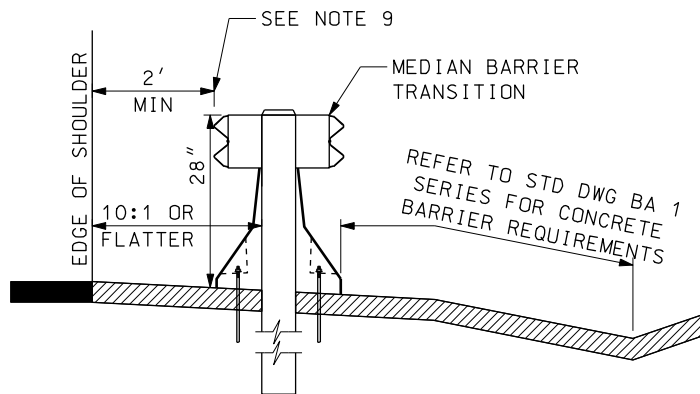
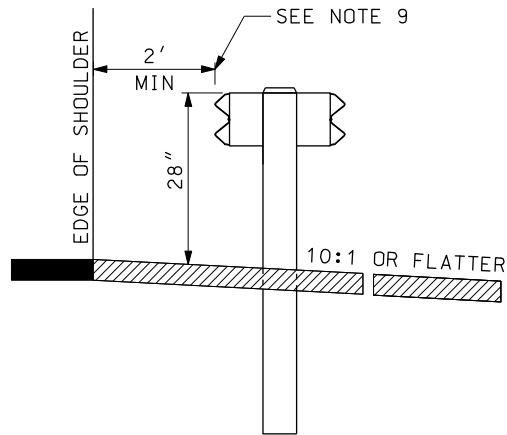
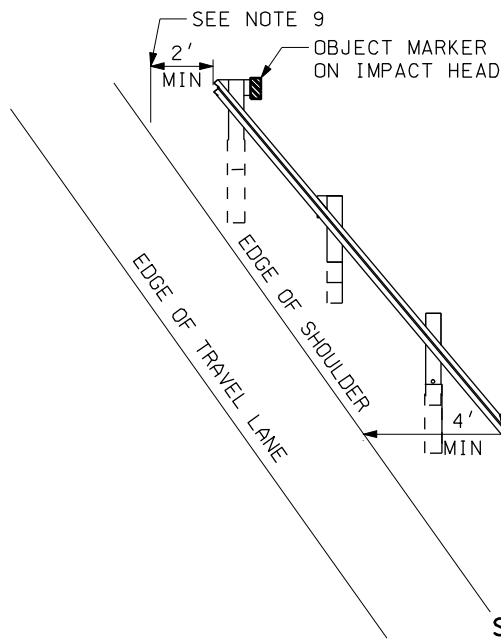
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| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |



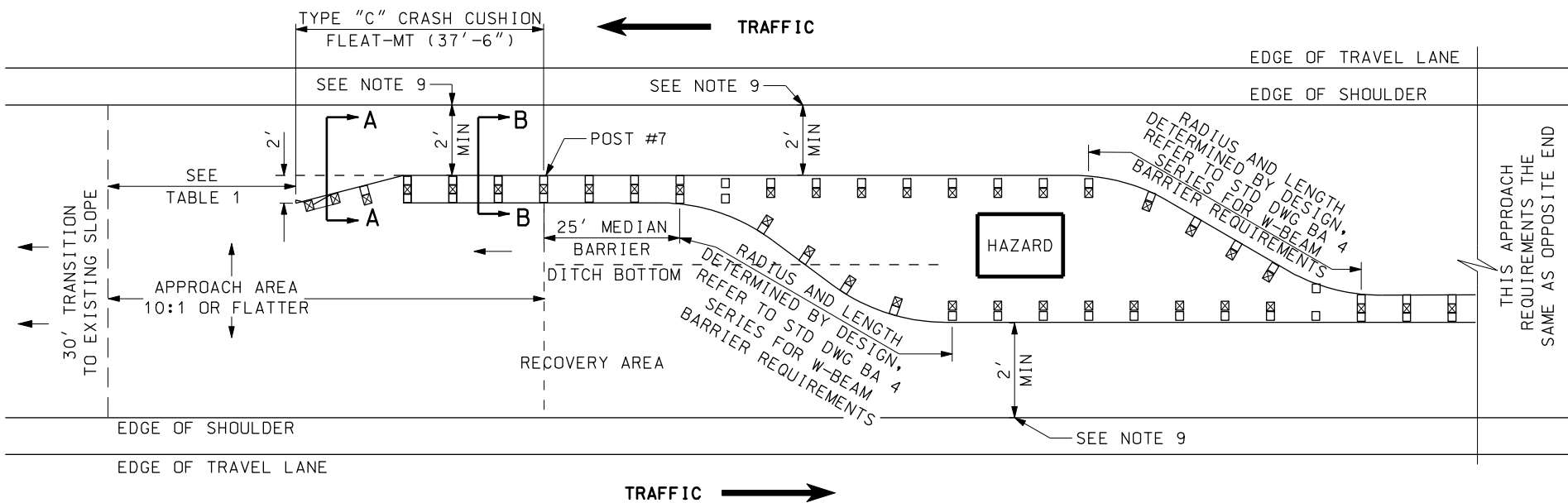
CONCRETE BARRIER INSTALLATION DETAIL



SECTION B-B

SECTION C-C PIN BARRIER SECTION 1 AND 2 WITH STABILIZATION PINS

W-BEAM GUARDRAIL BARRIER INSTALLATION DETAIL



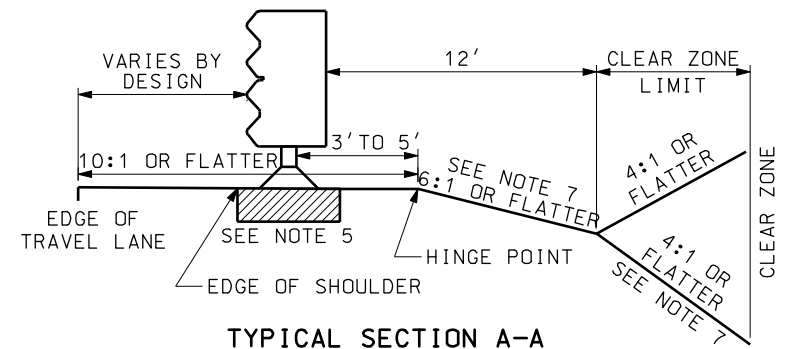
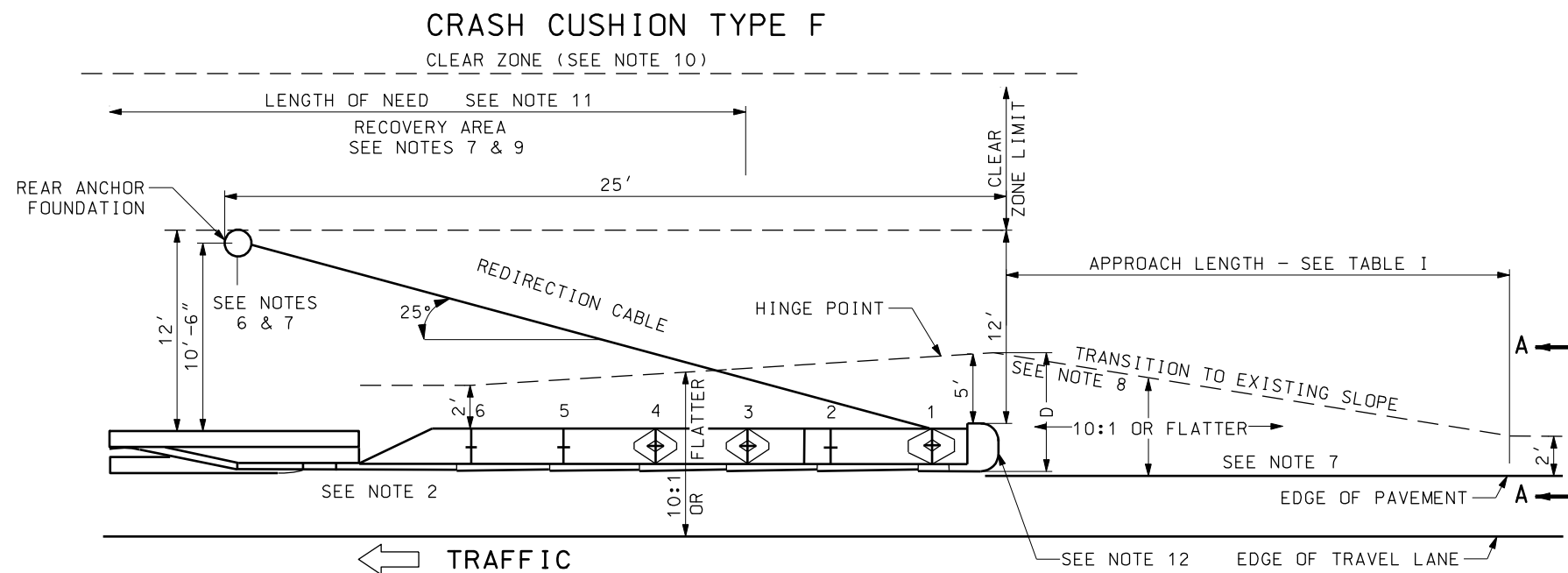
NOTES:

1. THE FLEAT-MT, MANUFACTURED BY ROAD SYSTEMS INC. SEE UDOT'S GUIDELINES FOR SPECIFIC SYSTEM DETAILS.
2. INSTALL SYSTEMS AS PER UDOT'S AND MANUFACTURER'S SPECIFICATIONS.
3. REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR APPROVED POST OPTIONS.
4. HAVE SHOP DRAWING AVAILABLE ON SITE FOR REFERENCE DURING INSTALLATION.
5. USE GRADED AND COMPACT SURFACE FOR FLEAT-MT SYSTEMS.
6. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
7. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA. SIGNS OR POLES PLACED IN THE RECOVERY AREA WILL BE BREAKAWAY AND BE A MINIMUM 10 FEET FROM SYSTEM RAIL ELEMENTS.
8. INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1 AND THIS DRAWING.
9. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

SUPPLEMENTAL DRAWING

| | | | | | | | |
|---|----------|-----|--|---|--|------------------|--|
| REVISIONS | | MEE | | ADDED NOTE 9 AND SEVERAL EDITORIAL UPDATES. | | REVISED TABLE 1. | |
| 1 | 10-30-08 | | | | | | |
| UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE COUNTY | | | | | | | |
| RECOMMENDED FOR APPROVAL | | | | OCT.30.2008 DATE | | | |
| CHAIRMAN STANDARDS COMMITTEE | | | | OCT.30.2008 DATE | | | |
| APPROVED | | | | DEPUTY DIRECTOR | | | |
| GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C FLEAT-MT | | | | STANDARD DRAWING TITLE | | | |
| STD DWG CC 5C | | | | Doc Page 1-2 | | | |

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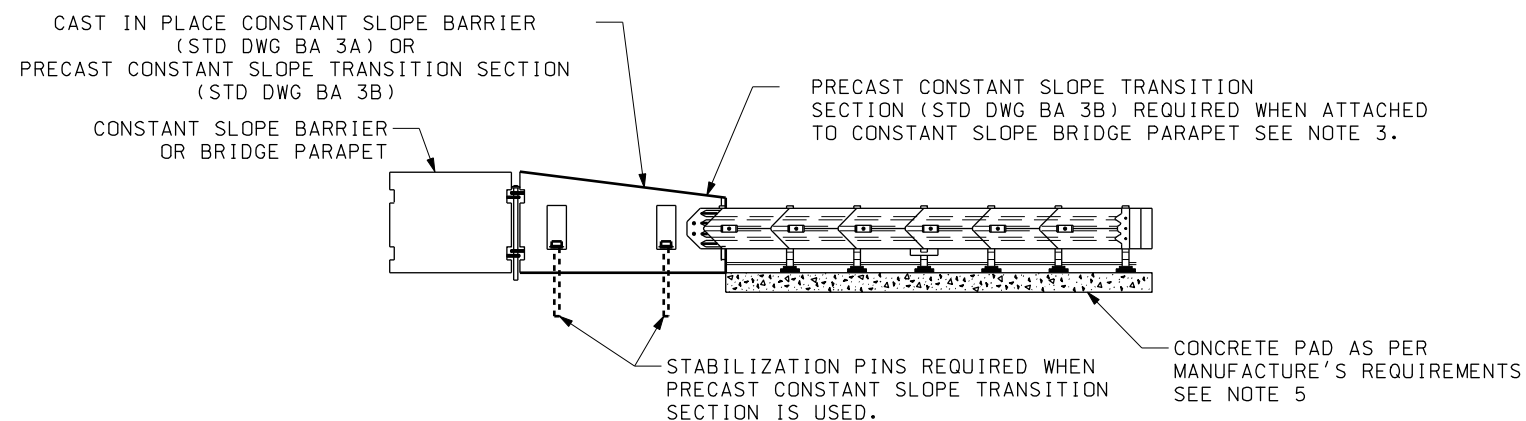
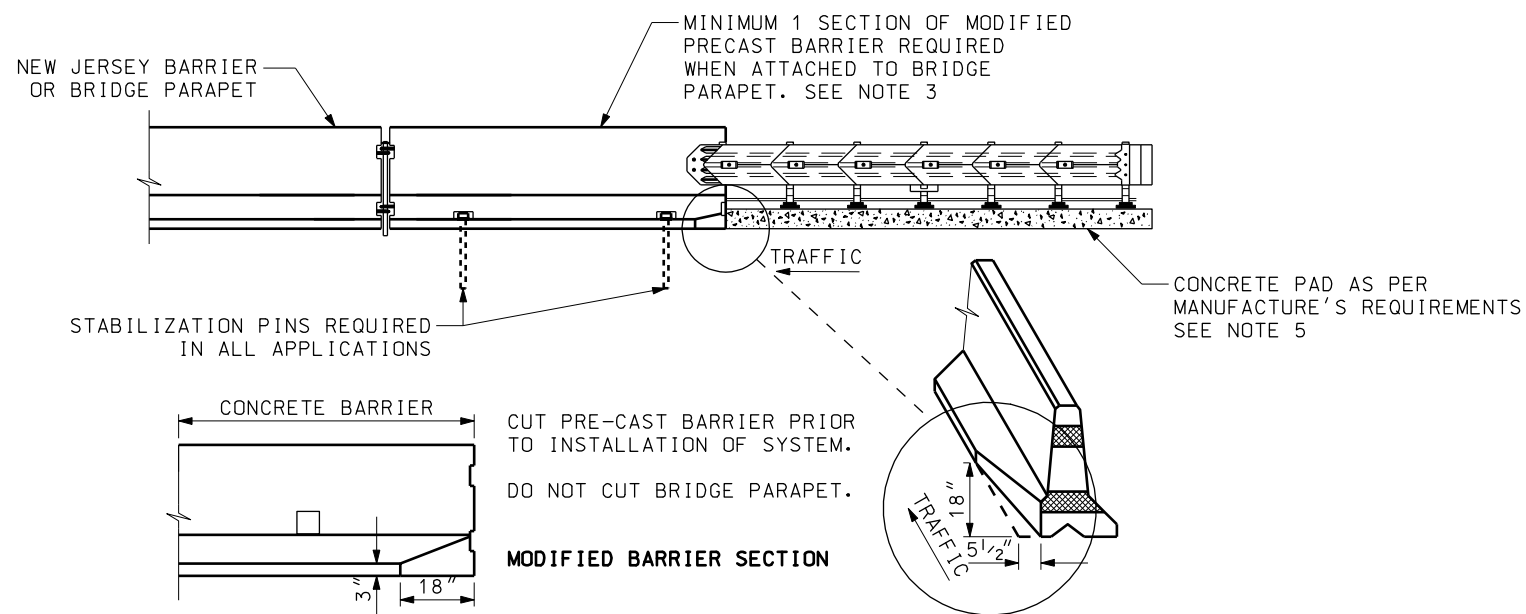


| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

D X TAPER= APPROACH LENGTH

NOTES FOR CRASH CUSHION TYPE F

1. THE QUADTREND-350 IS MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, SEE UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR SPECIFIC SYSTEM DETAILS.
2. USE SYSTEM WHEN DIRECT ATTACHMENT TO BARRIER IS REQUIRED AND THE LONGITUDINAL SPACE IN FRONT OF THE HAZARD IS EQUAL TO THE REQUIRED MINIMUM LENGTH AS STATED IN TABLE 1. INSTALL SYSTEM AS PER UDOT'S AND MANUFACTURER'S SPECIFICATIONS.
3. CUT PRE-CAST NEW JERSEY BARRIER AS PER DETAIL, PRIOR TO INSTALLATION OF SYSTEM. SEAL CUT WITH THE SAME TYPE OF SEALER USED ON BARRIER. DO NOT CUT BRIDGE PARAPET. INSTALL 1 SECTION OF A PRECAST BARRIER, CUT AS PER DETAIL. INSTALL STABILIZATION PINS IN BARRIER SECTION. CONSTANT SLOPE BARRIER OR CONSTANT SLOPE BARRIER TRANSITION DOES NOT NEED MODIFICATION. THE REQUIRED BARRIER SECTIONS ARE A SEPARATE PAY ITEM FROM THE CRASH CUSHION.
4. HAVE SHOP DRAWING AVAILABLE ON SITE FOR REFERENCE DURING INSTALLATION.
5. INSTALL CONCRETE PAD AS PER MANUFACTURER'S REQUIREMENTS.
6. PLACE CABLE ANCHOR FOUNDATION IN SUCH A MANNER THAT THE REDIRECTING CABLE LAYS 6:1 OR FLATTER ON TOP OF THE GROUND, AND THE FOUNDATION WITH THE CABLE ANCHOR BRACKET ATTACHED DOES NOT EXCEED 4 INCHES ABOVE GROUND LEVEL. DO NOT BURY REDIRECTION CABLE.
7. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
 - A. USE A 10:1 OR FLATTER SLOPE IN APPROACH AREA.
 - B. A FORESLOPE AREA OF 12 FOOT X 25 FOOT AT 6:1 OR FLATTER REQUIRED FOR REAR ANCHOR FOUNDATION INSTALLATION
 - C. USE A 4:1 OR FLATTER FORESLOPE IN RECOVERY AREA, AFTER REAR ANCHOR SLOPES HAVE BEEN ESTABLISHED
 - 1) IF A 4:1 FORESLOPE IS IMPRACTICAL USE A MAXIMUM 3:1 FORESLOPE IN RECOVERY AREA. ESTABLISH RECOVERY AREA AT THE TOE OF THE 3:1 FORESLOPE OF 4:1 OR FLATTER.
 - D. USE OF 4:1 BACKSLOPE TO CLEAR ZONE LIMIT IN RECOVERY AREA PERMITTED ONLY AFTER THE REAR ANCHOR FORESLOPE S HAVE BEEN ESTABLISHED. IF A 4:1 BACKSLOPE IS IMPRACTICAL A 3:1 IS PERMITTED.
8. CONSTRUCT PLATFORM AS REQUIRED EVEN IF THE PLATFORM EXTENDS BEYOND THE CLEAR ZONE.
9. CLEAR THE RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
 - A. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
 - B. USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA. MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO THE SIDES AND REAR OF SYSTEM.
10. ATTACH SAND CONTAINERS AT POSTS 1, 3 AND 4.
11. USE CURRENT EDITION OF ROADSIDE DESIGN GUIDE TO ESTABLISH CLEAR ZONE AND LENGTH OF NEED (LON) REQUIREMENTS.
12. INSTALL REQUIRED MARKING AS PER STD DWG CC 1.



SUPPLEMENTAL DRAWING

USE THIS DETAIL WHEN SYSTEM IS INSTALLED WITH CONSTANT SLOPE BARRIER

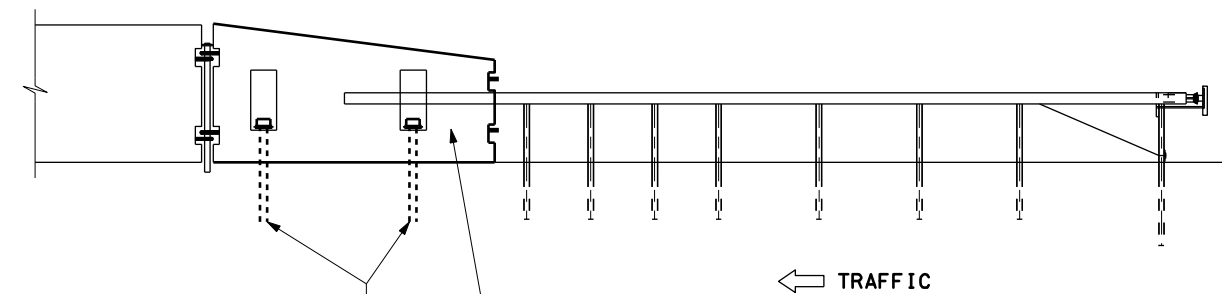
| REVISIONS | | REVISIONS | DATE | APPR. | REMARKS |
|-----------|----------|-----------|------------------------------|-------|---------|
| 1 | 10-30-08 | MEE | REVISION NOTE 9 AND TABLE 1. | | |

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| UTAH DEPARTMENT OF TRANSPORTATION | | STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| RECOMMENDED FOR APPROVAL | | DATE | |
| CHAIRMAN STANDARDS COMMITTEE | | JAN.01.2008 | |
| DEPUTY DIRECTOR | | JAN.01.2008 | |

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| GRADING AND INSTALLATION DETAILS | | CRASH CUSHION TYPE F | |
| QUAD TREND 350 | | STANDARD DRAWING TITLE | |

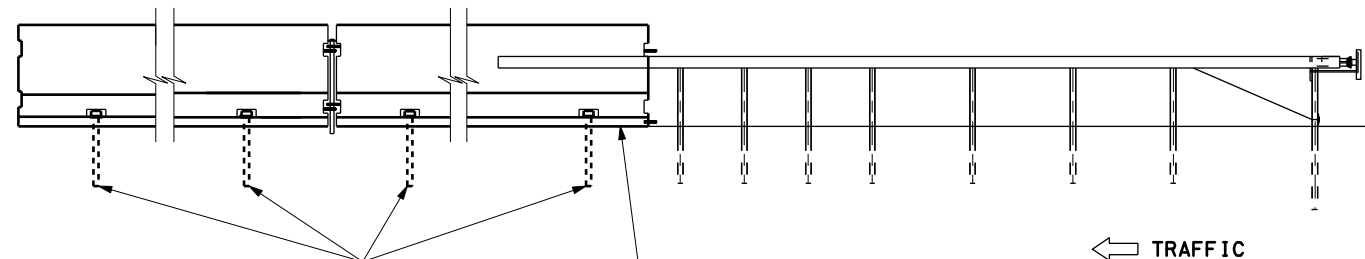
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| STD DWG | Doc |
| CC 7A | Page |
| | 1-3 |

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INSTALL STABILIZATION PINS WHEN CONSTANT SLOPE BARRIER SECTION IS USED

DIRECT ATTACHMENT TO CAST IN PLACE CONSTANT SLOPE BARRIER SECTION (STD DWG BA 3 SERIES). CAST IN PLACE CONSTANT SLOPE BARRIER TRANSITION SECTION (STD DWG BA 3B) REQUIRED WHEN ATTACHED TO CONSTANT SLOPE BRIDGE PARAPET. SEE NOTE 3.

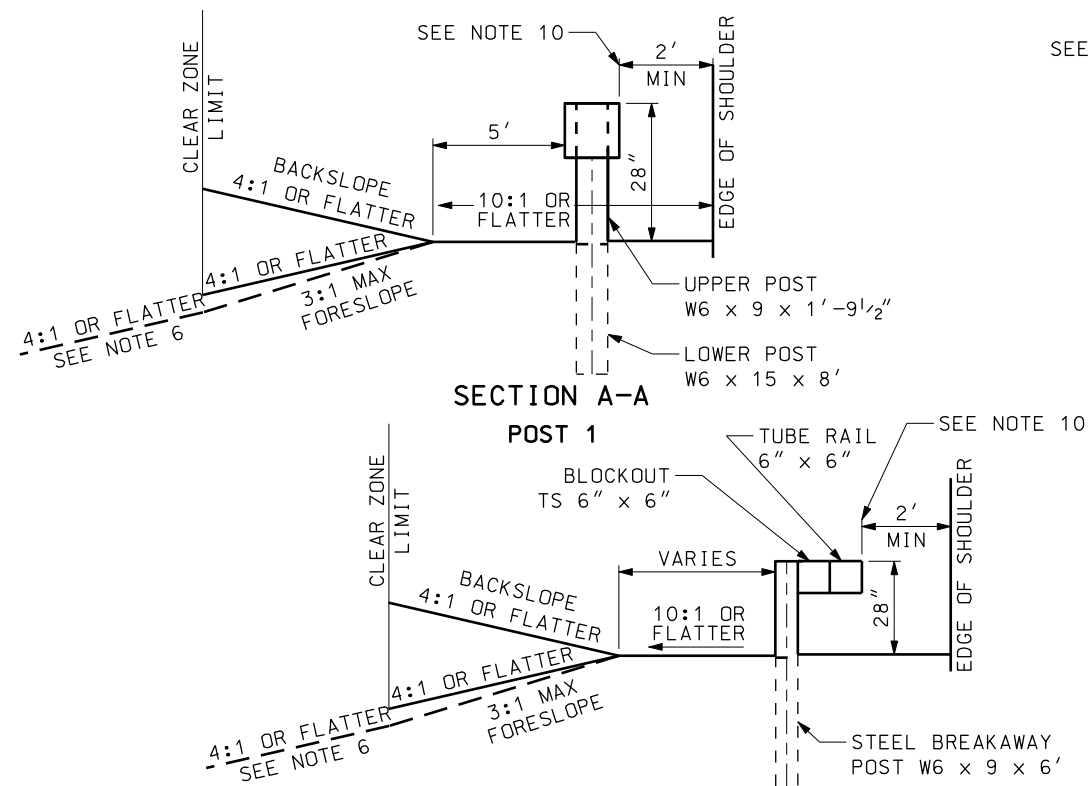


INSTALL STABILIZATION PINS WHEN PRE-CAST JERSEY SHAPED BARRIER SECTION IS USED

DIRECT ATTACHMENT TO NEW JERSEY SHAPED BARRIER (STD DWG BA 1 SERIES) OR NEW JERSEY SHAPED BRIDGE PARAPET SEE NOTE 3.

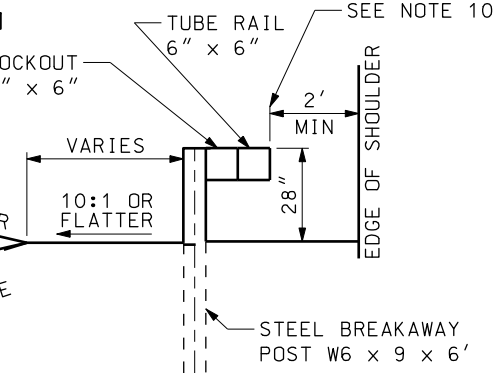
DETAIL WHEN SYSTEM IS INSTALLED WITH CONSTANT SLOPE BARRIER

(GROUND MOUNTED POST SHOWN, SURFACE MOUNTED STEEL BREAKAWAY POST ACCEPTABLE, SEE NOTE 5)

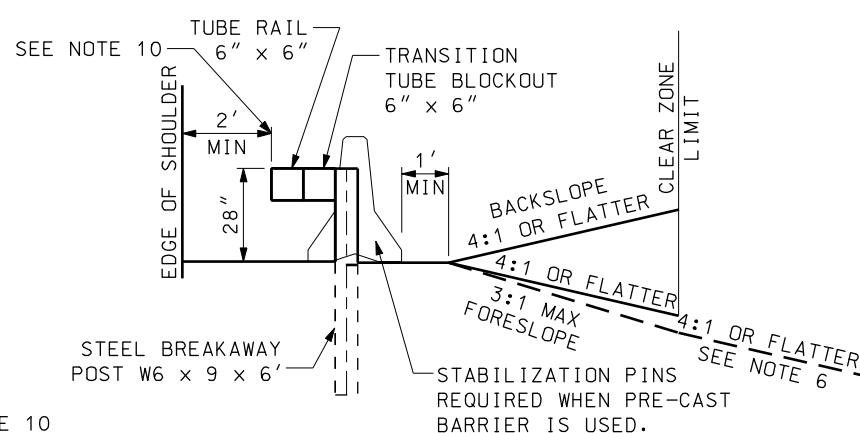


SECTION A-A

POST 1



SECTION B-B
POSTS 2 TO POST 6



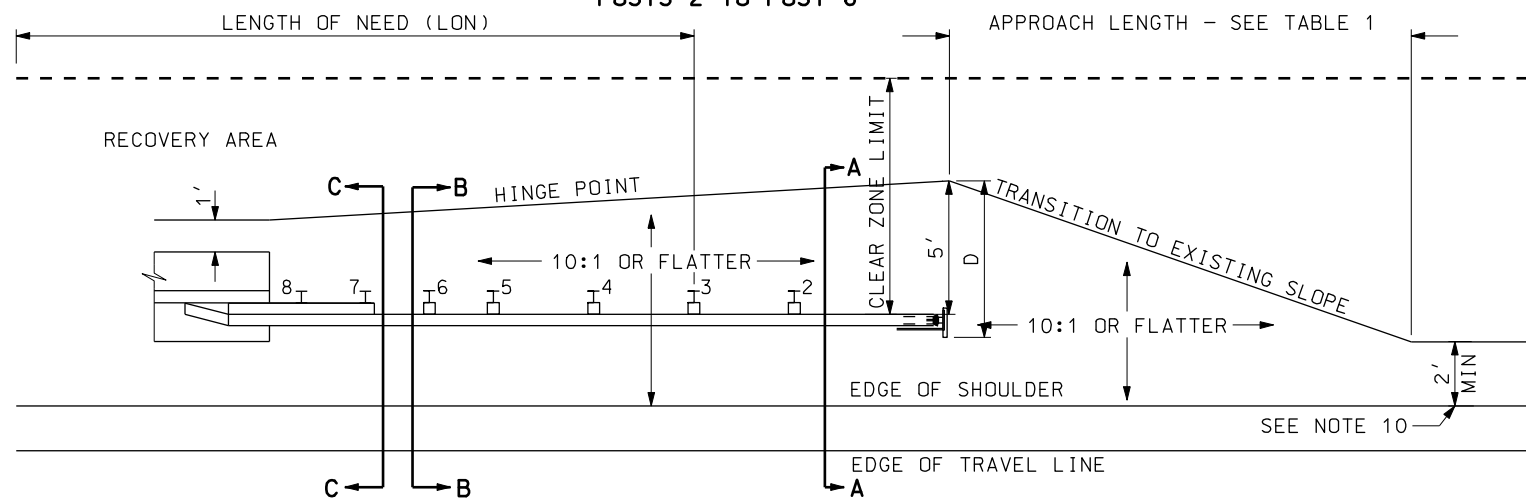
SECTION C-C
POSTS 7-8

| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

D X TAPER= APPROACH LENGTH

NOTES FOR CRASH CUSHION TYPE F

1. THE BEAT-SSCC, MANUFACTURED BY ROAD SYSTEMS INC. SEE UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR SPECIFIC SYSTEM DETAILS.
2. USE SYSTEM WHEN DIRECT ATTACHMENT TO BARRIER IS REQUIRED AND THERE IS LESS THAN 125 FEET OF LONGITUDINAL SPACE IN FRONT OF THE HAZARD. INSTALL SYSTEM AS PER UDOT'S AND MANUFACTURER'S SPECIFICATIONS.
3. ATTACH SYSTEM TRANSITION TO BARRIER OR BRIDGE PARAPET AS PER MANUFACTURER'S REQUIREMENTS.
4. HAVE SHOP DRAWING AVAILABLE ON SITE FOR REFERENCE DURING INSTALLATION.
5. THE BEAT-SSCC REQUIRES A GRADED AND COMPACTED SURFACE WHEN GROUND MOUNTED POSTS ARE USED. SURFACE MOUNTED POST OPTIONAL, USE MANUFACTURER'S SPECIFICATIONS FOR CONCRETE PAD, POSTS AND MOUNTING HARDWARE.
6. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
 - A. USE 10:1 OR FLATTER SLOPES IN APPROACH AREA.
 - B. USE 4:1 OR FLATTER FORESLOPE OR BACKSLOPE IN THE RECOVERY AREA.
 - 1) IF A 4:1 FORESLOPE IN RECOVERY AREA IS IMPRACTICAL USE A RECOVERY AREA AT THE TOE OF THE 3:1 FORESLOPE OF 4:1 OR FLATTER.
 - 2) MAXIMUM 4:1 BACKSLOPE TO THE CLEAR ZONE LIMIT IN THE RECOVERY AREA.
7. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
 - A. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
 - B. USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA. MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO SYSTEM.
8. INSTALL REQUIRED MARKING AS PER STD DWG CC 1, TYPE G.
9. REFER TO THE CURRENT EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE TO DETERMINE LENGTH OF NEED (LON) AND CLEAR ZONE REQUIREMENTS.
10. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



SUPPLEMENTAL DRAWING

| REVISIONS | | GS | ADDED MISSING INFORMATION. |
|-----------|----------|-------|---|
| 1 | 04/24/08 | MEE | ADDED NOTE 10 AND DETAILS REARRANGED. |
| 2 | 10/30/08 | | REVISED NOTE 7 AND TABLE 1 AND SEVERAL EDITORIAL UPDATES. |
| | | NO. | DATE |
| | | APPR. | REMARKS |

| UTAH DEPARTMENT OF TRANSPORTATION | |
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| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| RECOMMENDED FOR APPROVAL | |
| CHAIRMAN | STANDARDS COMMITTEE |
| DEPUTY DIRECTOR | |
| OCT 30 2008 | DATE |
| OCT 30 2008 | DATE |

| CRASH CUSHION TYPE F BEAT-SSCC | |
|--------------------------------------|------|
| STD DWG | Doc |
| CC 7B | Page |
| 1-1 | |

CRASH CUSHION TYPE G

Diagram illustrating the dimensions and components of a CRASH CUSHION TYPE G, showing the transition from a guardrail to a crash cushion and back to a guardrail.

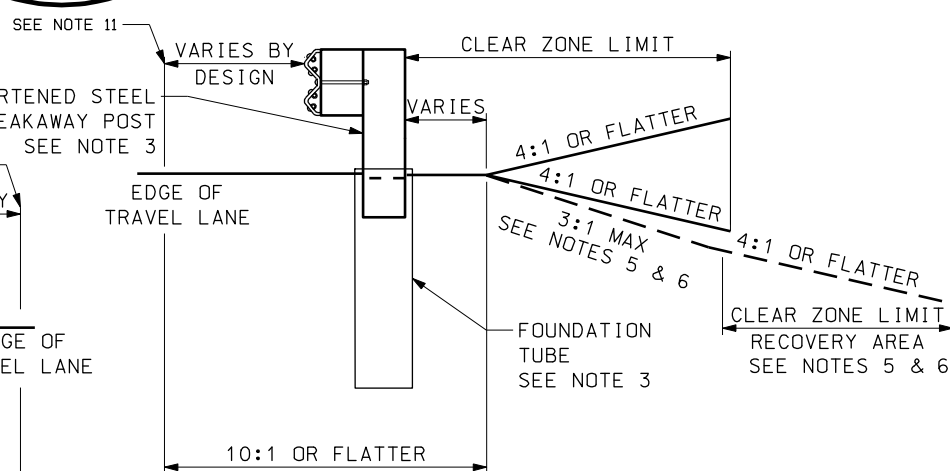
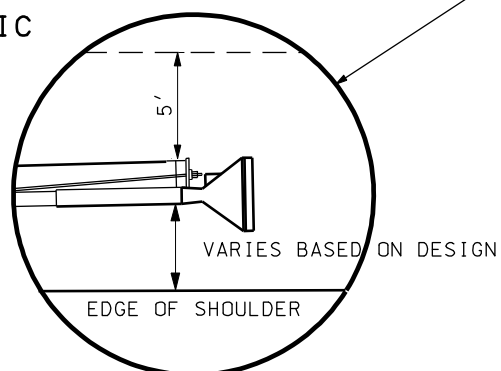
Key Dimensions and Labels:

- LENGTH OF NEED (LON):** The total length of the crash cushion system.
- CLEAR ZONE:** The area before and after the crash cushion where no obstructions are present.
- RECOVERY AREA:** The area between the crash cushion and the guardrail, defined by a 4:1 or flatter slope.
- HINGE POINT:** The point where the crash cushion meets the recovery area.
- APPROACH LENGTH:** The length of the crash cushion before the hinge point.
- TRANSITION TO EXISTING SLOPE:** The area after the hinge point, defined by a 10:1 or flatter slope.
- EDGE OF SHOULDER:** The boundary of the road shoulder.
- GUARDRAIL OR TRANSITION:** The structure at the end of the transition area.
- CRASH CUSHION:** The main energy-absorbing structure.
- SEE NOTE 4:** Reference to the crash cushion design details.
- SEE NOTE 5 & 6:** Reference to the recovery area design details.
- SEE NOTE 7:** Reference to the transition to existing slope design details.
- SEE NOTE 8:** Reference to the guardrail or transition design details.
- SEE NOTES 2 & 9:** Reference to the crash cushion design details.

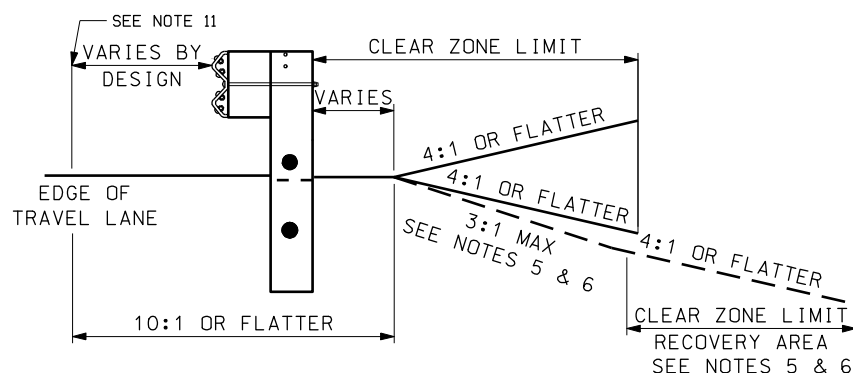
The diagram shows a cross-section of the crash cushion system with various dimensions and labels indicating the required clear zone, recovery area, and transition to existing slope. The crash cushion is shown as a series of vertical posts (A, B, C) and a horizontal base (D). The transition area is shown as a sloped surface (E) leading to the existing slope (F). The guardrail or transition is shown as a vertical structure (G) at the end of the transition area.

$$D \times \text{TAPER} = \text{APPROACH LENGTH}$$

1. APPROVED SYSTEMS: ET-2000 AND ET-PLUS MANUFACTURED BY TRINITY INDUSTRIES AND THE SKT-350, MANUFACTURED BY ROAD SYSTEMS INC. REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS AND END TREATMENTS FOR SPECIFIC SYSTEM DETAILS.
2. SYSTEM OFFSET:
 - A. INSTALL SYSTEM WITH 2 FOOT OFFSET (25:1 FLARE RATE) WHEN USED WITH A TANGENT BARRIER SYSTEM.
 - B. INSTALL SYSTEM AT THE SAME FLARE RATE AS THE BARRIER IT IS BEING ATTACHED TO.
3. REFER TO UDOT'S GUIDELINES FOR CRASH CUSHION AND END TREATMENTS FOR POST REQUIREMENTS.
 - A. POST 1
 - 1) ET SERIES-HINGE BREAKAWAY POST (HBA)
 - 2) SKT-350 PLUG WELDED POST INSIDE FOUNDATION TUBE
4. RAIL ELEMENTS
 - A. USE 12 $\frac{1}{2}$ FOOT RAIL ELEMENTS AS SPECIFIED BY THE SYSTEM MANUFACTURER.
 - B. DO NOT BOLT RAIL ELEMENT AT POST 1.
 - C. REFER TO MANUFACTURE SPECIFICATIONS FOR OTHER RAIL TO POST BOLT REQUIREMENTS.
5. COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
 - A. USE 10:1 OR FLATTER SLOPES IN APPROACH AREA.
 - B. USE 4:1 OR FLATTER FORESLOPE OR BACKSLOPE IN THE RECOVERY AREA.
 - 1) IF A 4:1 FORESLOPE IN RECOVERY AREA IS IMPRACTICAL USE A MAXIMUM 3:1 FORESLOPE. ESTABLISH A RECOVERY AREA AT THE TOE OF THE 3:1 FORESLOPE OF 4:1 OR FLATTER.
 - C. USE A 4:1 BACKSLOPE TO THE CLEAR ZONE LIMIT IN THE RECOVERY AREA. IF A 4:1 BACKSLOPE CANNOT BE ESTABLISHED A 3:1 BACKSLOPE IS PERMITTED.
6. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
 - A. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
 - B. USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA, AND MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO THE SIDES AND REAR OF THE SYSTEM.
7. CONSTRUCT PLATFORM AS REQUIRED WHEN THE SPACE IS AVAILABLE EVEN IF THE PLATFORM EXTENDS BEYOND THE CLEAR ZONE REQUIREMENTS. SEE STD DWG CC8B FOR EXCEPTIONS.
8. USE GUARDRAIL TRANSITION, STD DWG BA 4 SERIES, WHEN ATTACHING SYSTEM TO CONCRETE BARRIER OR BRIDGE PARAPET.
9. INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
10. USE THE CURRENT EDITION, ROADSIDE DESIGN GUIDE TO ESTABLISH CLEAR ZONE REQUIREMENT AND LENGTH OF NEED (LON) REQUIREMENTS.
11. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



TYPICAL SECTION A-A
POST 1
SEE NOTE 3



TYPICAL SECTION C-C
POSTS 5-8
SEE NOTE 3

SUPPLEMENTAL DRAWING

| REVISIONS | | |
|-----------|----------|---|
| | 10-30-08 | MEE ADDED NOTE 11, REVISION NOTE 6 AND TABLE 1. |
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| NO. | DATE | APPR. REMARKS |

~~UTAH DEPARTMENT OF TRANSPORTATION~~
~~STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION~~
~~SALT LAKE COUNTY, UTAH~~

~~RECOMMENDED FOR APPROVAL~~ *[Signature]* ~~JAN.01.2008~~

~~CHAIRMAN STANDARDS COMMITTEE~~ ~~DATE~~

~~APPROVED~~ *[Signature]* ~~JAN.01.2008~~

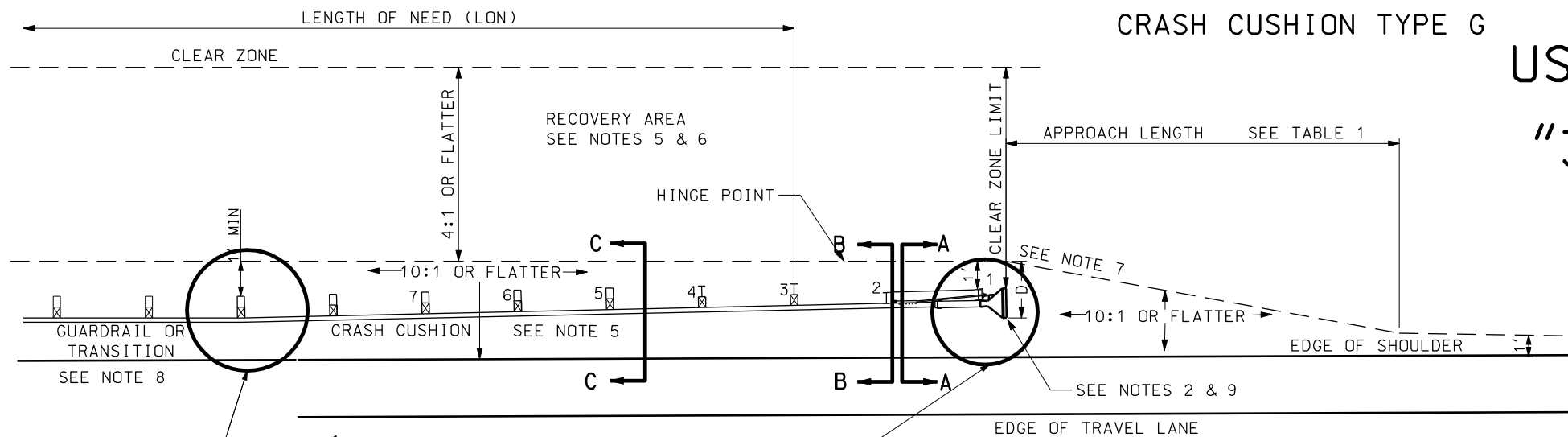
~~DEPUTY DIRECTOR~~ ~~DATE~~

GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE G

STANDARD DRAWING TITLE

STD DWG
CC 8A Doc
Page
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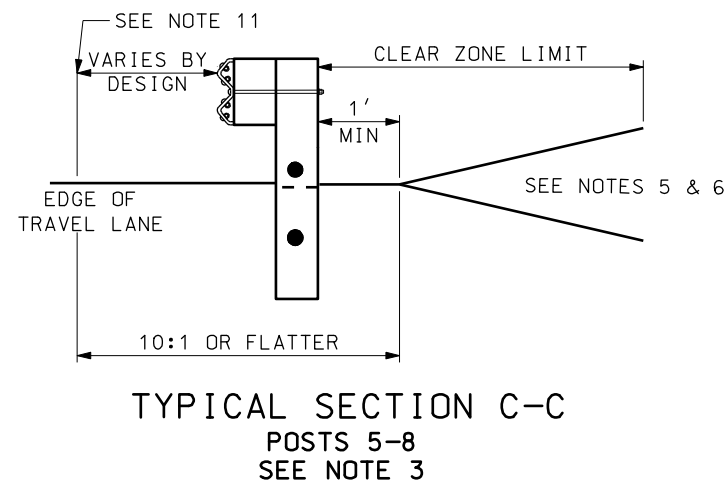
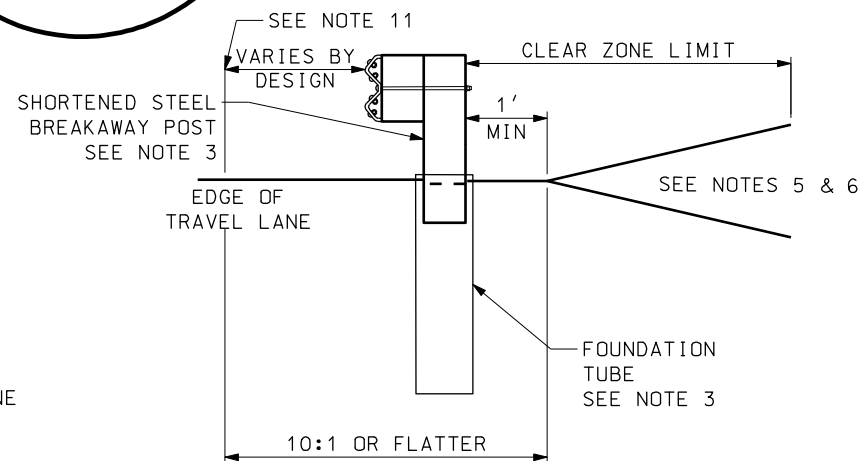
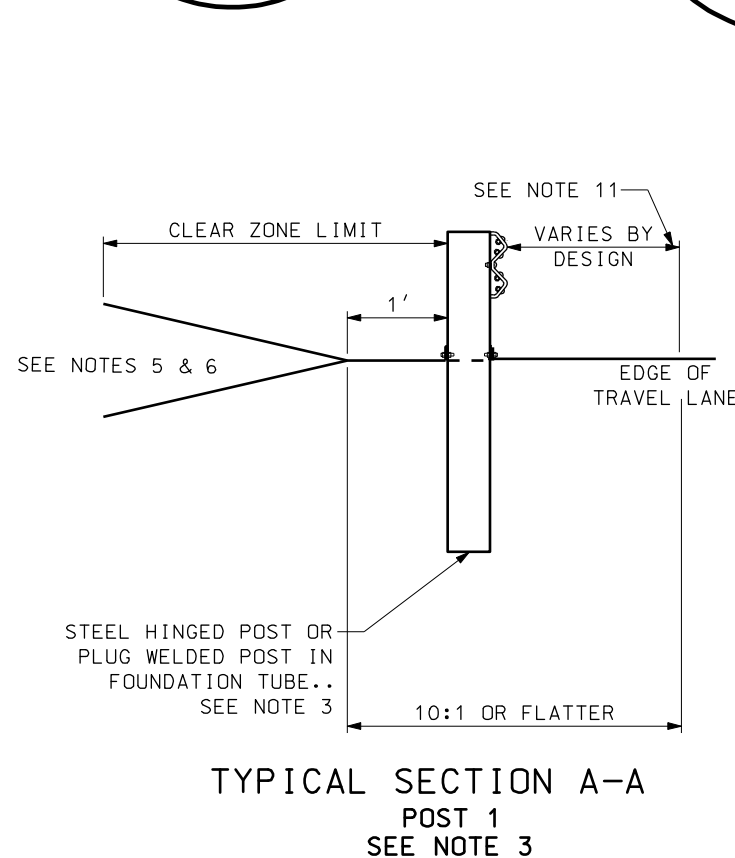


| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

D X TAPER= APPROACH LENGTH

NOTES:

- APPROVED SYSTEMS: ET-2000 AND ET-PLUS MANUFACTURED BY TRINITY INDUSTRIES AND THE SKT-350, MANUFACTURED BY ROAD SYSTEMS INC. REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS AND END TREATMENTS FOR SPECIFIC SYSTEM DETAILS.
- SYSTEM OFFSET:
 - INSTALL SYSTEM WITH 2 FOOT OFFSET (25:1 FLARE RATE) WHEN USED WITH A TANGENT BARRIER SYSTEM.
 - INSTALL SYSTEM AT THE SAME FLARE RATE AS THE BARRIER INSTALLATION SYSTEM IS BEING ATTACHED TO.
- POST OPTIONS: REFER TO UDOT'S GUIDELINES FOR CRASH CUSHION FOR APPROVED POST OPTIONS.
 - POST 1
 - ET SERIES-HINGE BREAKAWAY POST (HBA)
 - SKT-350 PLUG WELDED POST INSIDE FOUNDATION TUBE.
- RAIL ELEMENTS
 - USE 12½ FOOT RAIL ELEMENTS AS SPECIFIED BY THE SYSTEM MANUFACTURER.
 - DO NOT BOLT RAIL ELEMENT TO POST 1.
 - REFER TO MANUFACTURER SPECIFICATIONS FOR OTHER RAIL TO POST BOLT REQUIREMENTS.
- COMPLETE SLOPE PREPARATIONS PRIOR TO INSTALLING SYSTEM.
 - USE 10:1 OR FLATTER SLOPES IN APPROACH AREAS.
 - CONSTRUCT RECOVERY AREA SLOPE AS PER CC 8A WHEN CONDITIONS PERMIT. CONSULT ENGINEER FOR ALLOWABLE SLOPES WHEN SLOPE REQUIREMENTS OF CC 8A CANNOT BE MET.
- CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
 - DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
 - USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA, AND MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO THE SIDES AND REAR OF THE SYSTEM.
- CONSTRUCT PLATFORM AS REQUIRED EVEN IF THE PLATFORM EXTENDS BEYOND THE CLEAR ZONE REQUIREMENT.
- USE GUARDRAIL TRANSITION, STD DWG BA 4 SERIES, WHEN ATTACHING SYSTEM TO CONCRETE BARRIER OR BRIDGE PARAPET.
- INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
- USE THE CURRENT EDITION, ROADSIDE DESIGN GUIDE TO ESTABLISH CLEAR ZONE REQUIREMENT AND LENGTH OF NEED (LON) REQUIREMENTS.
- WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



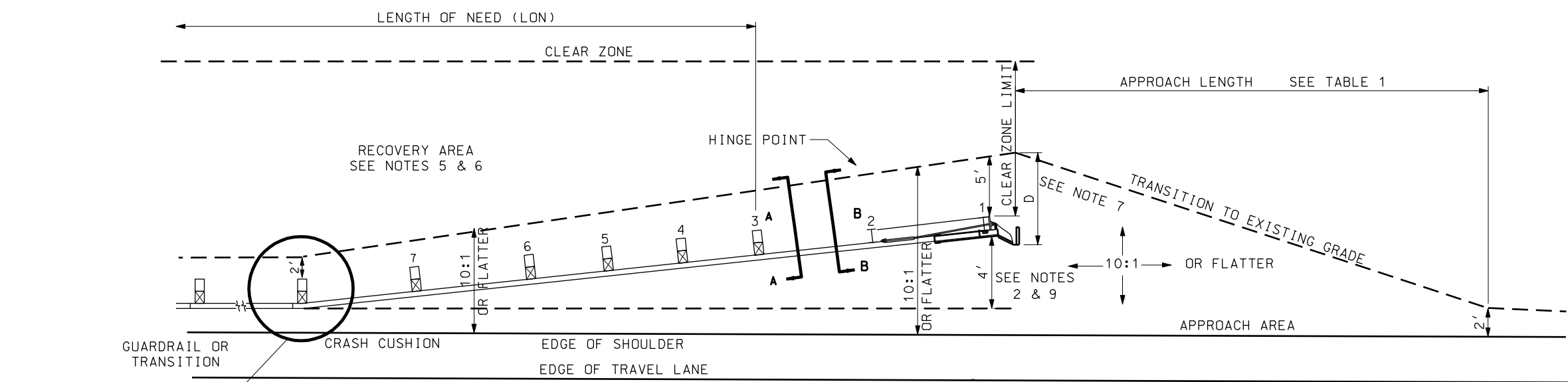
SUPPLEMENTAL DRAWING

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|-----------|----------|------|-------|--|
| REVISIONS | NO. | DATE | APPR. | REMARKS |
| 1 | 10-30-08 | | | SEE ADDED NOTE 11, REVISION NOTE 6 AND TABLE 1, AND SEVERAL EDITORIAL UPDATES. |

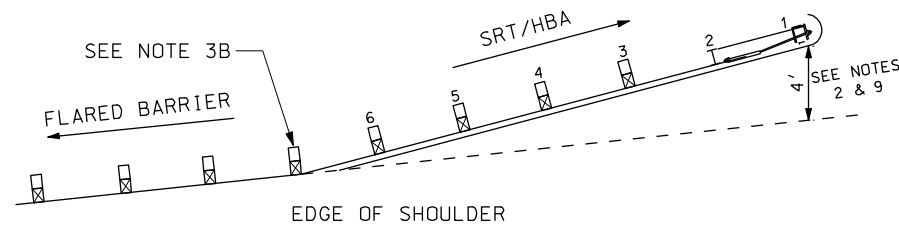
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|-----------------------------------|--|------------------|
| UTAH DEPARTMENT OF TRANSPORTATION | STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | SALT LAKE COUNTY |
| RECOMMENDED FOR APPROVAL | DATE | DATE |
| CHAIRMAN | OCT.30.2008 | OCT.30.2008 |
| STANDARD COMMITTEE | | |
| APPROVED | | |
| DEPUTY DIRECTOR | | |

| | |
|---|------------------------|
| GRADING AND INSTALLATION DETAILS FOR "3R" PROJECTS CRASH CUSHION TYPE G | STANDARD DRAWING TITLE |
| STD DWG | Doc |
| CC 8B | Page |
| | 1 |

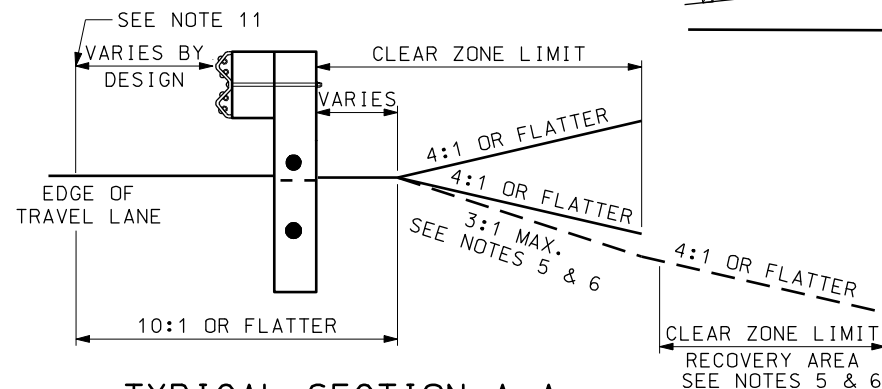
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FLEAT - 350 / SRT/HBA
WOOD/STEEL POST SEE NOTES 2, 3 & 8
SEE NOTES 2, 3 & 8



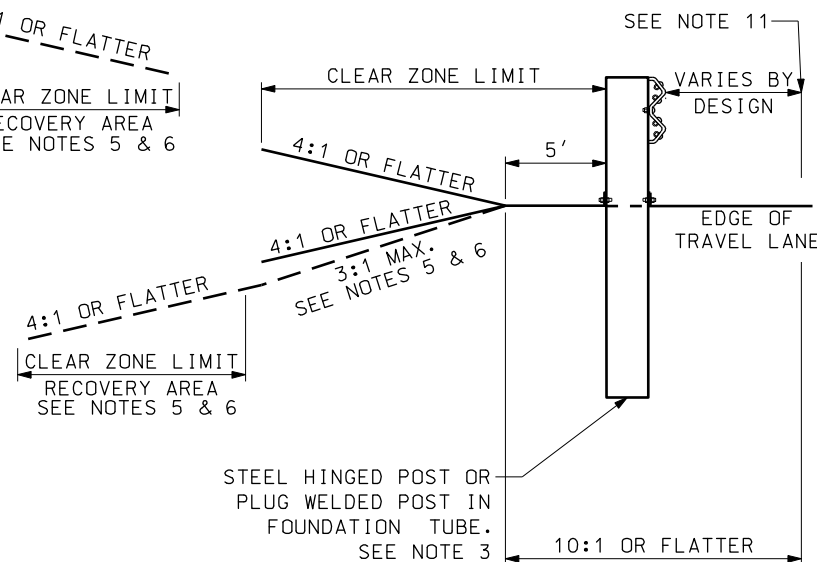
SRT/HBA WITH FLARED BARRIER
SEE NOTE 2 C



TYPICAL SECTION A-A
POSTS 3-8

| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

D X TAPER= APPROACH LENGTH



TYPICAL SECTION B-B
POSTS 1-2
SEE NOTE 3

SUPPLEMENTAL DRAWING

NOTES:

- APPROVED SYSTEMS: FLEAT 350, MANUFACTURED BY ROAD SYSTEMS, INC. AND SRT/HBA MANUFACTURED BY TRINITY INDUSTRIES REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS AND END TREATMENTS FOR SPECIFIC SYSTEM DETAILS.
- SYSTEM OFFSET:
 - INSTALL SYSTEM WITH A 4 FOOT OFFSET WHEN USED WITH A TANGENT BARRIER SYSTEM.
 - FLEAT-350: INSTALL AT THE SAME FLARE RATE AS THE BARRIER INSTALLATION.
 - SRT/HBA: INSTALL SYSTEM WITH A 4 FOOT OFFSET, FROM THE FLARED BARRIER EXTENDED.
- POST OPTIONS: REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR APPROVED POST OPTIONS.
 - POSTS 1 AND 2
 - FLEAT-350 PLUG WELDED POSTS SET INSIDE 6' FOUNDATION TUBES.
 - SRT/HBA HINGE BREAKAWAY POSTS.
 - SRT/HBA: THE LAST POST OF THE GUARDRAIL INSTALLATION OR THE GUARDRAIL TRANSITION ELEMENT (POST #11) WILL BE SUBSTITUTED WITH A CRT POST AS PER MANUFACTURER'S REQUIREMENTS.
- USE 12 1/2 FOOT RAIL SECTIONS (3 EACH SECTIONS), SLOTTED AS PER MANUFACTURER'S REQUIREMENTS.
- COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
 - USE 10:1 OR FLATTER SLOPES IN APPROACH AREA.
 - USE 4:1 OR FLATTER FORESLOPE OR BACKSLOPE IN THE RECOVERY AREA.
 - IF A 4:1 FORESLOPE IN RECOVERY AREA IS IMPRACTICAL USE A MAXIMUM 3:1 FORESLOPE. ESTABLISH A RECOVERY AREA AT THE TOE OF THE 3:1 FORESLOPE OF 4:1 OR FLATTER.
 - USE A 4:1 BACKSLOPE TO THE CLEAR ZONE LIMIT IN THE RECOVERY AREA IF A 4:1 CANNOT BE ESTABLISHED A 3:1 IS PERMITTED.
- CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
 - DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
 - USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA, AND MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO THE SIDES AND REAR OF SYSTEM.
- CONSTRUCT PLATFORM AS REQUIRED EVEN IF THE PLATFORM EXTENDS BEYOND THE CLEAR ZONE REQUIREMENTS.
- USE GUARDRAIL TRANSITION, STD DWG BA 4 SERIES, WHEN ATTACHING THE SYSTEM TO CONCRETE BARRIER OR BRIDGE PARAPET.
 - SRT/HBA: REPLACE THE LAST POST OF THE TRANSITION WITH A CRT POST. SEE NOTE 3.
- INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
- USE THE CURRENT ROADSIDE DESIGN GUIDE TO ESTABLISH CLEAR ZONE REQUIREMENT AND LENGTH OF NEED (LON) REQUIREMENTS.
- WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

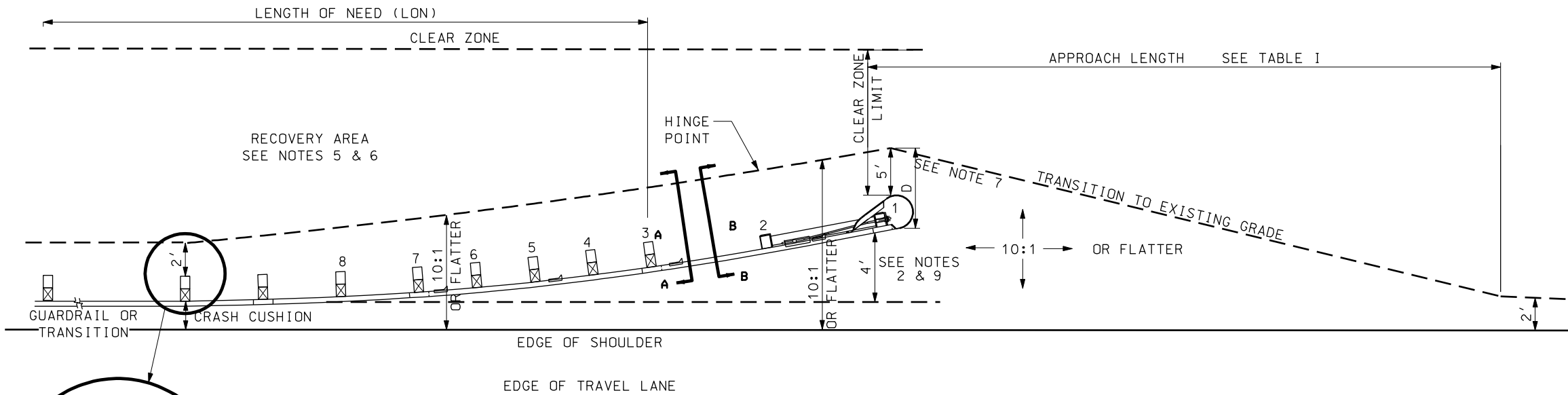
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|-----------|----------|-----|------|-------|---|
| 1 | 10-30-08 | | | | SEE ADDED NOTE 11, REVISION NOTE 6 AND TABLE 1. |

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| UTAH DEPARTMENT OF TRANSPORTATION | | OCT.30.2008 | |
| STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | | DATE | |
| RECOMMENDED FOR APPROVAL | | OCT.30.2008 | |
| CHAIRMAN STANDARDS COMMITTEE | | DATE | |
| DEPUTY DIRECTOR | | | |

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|-------------------------------------|--|------------------------|
| GRADING AND INSTALLATION DETAILS | | STANDARD DRAWING TITLE |
| CRASH CUSHION TYPE H | | |

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| STD DWG | Doc |
| CC 9A | Page |
| | 1-7 |

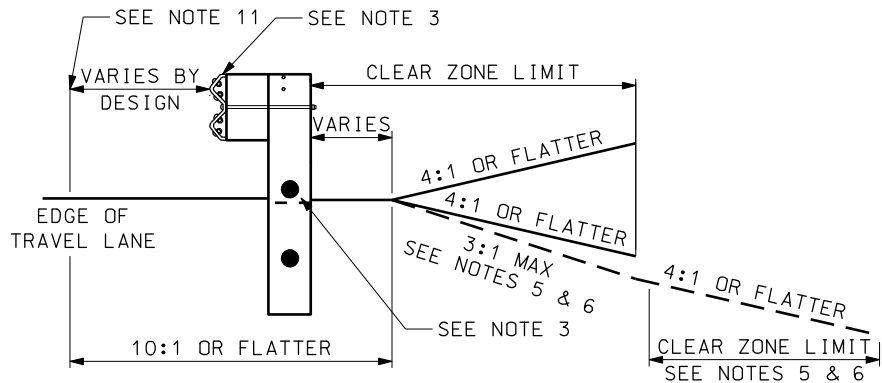
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SRT-350
(8 POSTS)
SEE NOTE 1

NOTES:

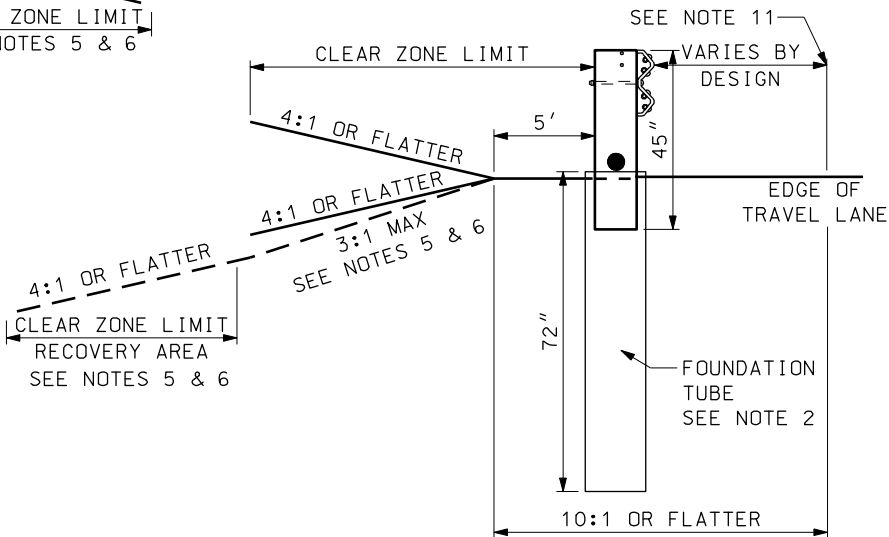
- APPROVED SYSTEM: SRT 350 MANUFACTURED BY TRINITY INDUSTRIES REFER TO UDOT'S GUIDELINES FOR CRASH CUSHIONS FOR SPECIFIC SYSTEM DETAILS.
- SYSTEM OFFSET:
A. THE SRT-350 INCORPORATES A PARABOLIC FLARE. INSTALL SYSTEM WITH A 4 FOOT OFFSET FROM THE BARRIER LINE EXTENDED ON BOTH A TANGENT AND FLARED INSTALLATION.
- POST OPTIONS:
A. WOOD POST ONLY
1) POSTS 1 AND 2, 45 INCH BREAKAWAY POSTS SET INSIDE 6 FOOT FOUNDATION TUBES. TUBES NO GREATER THAN 4 INCHES ABOVE GROUND.
2) POSTS 3 THROUGH 8 STANDARD CRT POST. THE BOTTOM OF THE TOP HOLE OF THE CRT POLE IS PLACED AT GROUND LEVEL.
- USE 12½ FOOT RAIL SECTIONS (3 EACH SECTIONS), SLOTTED AS PER MANUFACTURER'S REQUIREMENTS.
- COMPLETE SLOPE PREPARATION PRIOR TO INSTALLING SYSTEM.
A. USE 10:1 OR FLATTER SLOPES IN APPROACH AREA.
B. USE 4:1 OR FLATTER FORESLOPE OR BACKSLOPE IN THE RECOVERY AREA.
1) IF A 4:1 FORESLOPE. IN RECOVERY AREA IS IMPRACTICAL USE A MAXIMUM 3:1 FORESLOPE. ESTABLISH A RECOVERY AREA AT THE TOE OF THE 3:1 FORESLOPE OF 4:1 OR FLATTER.
C. USE A 4:1 BACKSLOPE TO THE CLEAR ZONE LIMIT IN THE RECOVERY AREA. IF A 4:1 CANNOT BE ESTABLISHED A 3:1 IS PERMITTED.
- CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS OR HAZARDS.
A. DO NOT PLACE SIGNS OR POLES IN APPROACH AREA.
B. USE BREAKAWAY SIGNS OR POLES WHEN PLACED IN RECOVERY AREA. MAINTAIN A MINIMUM 10 FOOT CLEARANCE TO THE SIDES AND REAR OF SYSTEM.
- CONSTRUCT PLATFORM AS REQUIRED EVEN IF THE PLATFORM EXTENDS BEYOND THE CLEAR ZONE REQUIREMENTS.
- USE GUARDRAIL TRANSITION, STD DWG BA 4 SERIES, WHEN ATTACHING THE SYSTEM TO CONCRETE BARRIER OR BRIDGE PARAPET.
- INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
- USE THE CURRENT ROADSIDE DESIGN GUIDE TO ESTABLISH CLEAR ZONE REQUIREMENT AND LENGTH OF NEED (LON) REQUIREMENTS.
- WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



TYPICAL SECTION A-A
POSTS 3-8

| TABLE 1 | |
|--------------|-------|
| SPEED MPH | TAPER |
| LESS THAN 40 | 7:1 |
| 40 TO 55 | 10:1 |
| 60 TO 75 | 15:1 |

D X TAPER= APPROACH LENGTH



TYPICAL SECTION B-B
POSTS 1-2

SUPPLEMENTAL DRAWING

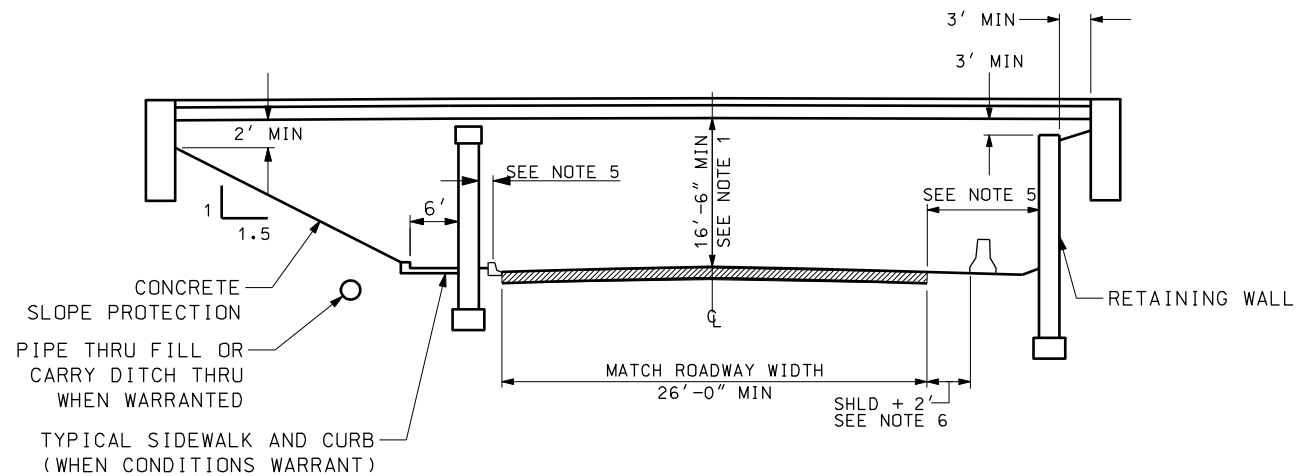
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| 1 | 10-30-08 | | | | SEE ADDED NOTE 11, REVISION NOTE 6 AND TABLE 1 |

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| UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE DEPUTY DIRECTOR | DATE | OCT, 30, 2008 |
| | DATE | OCT, 30, 2008 |
| | DATE | |
| | DATE | |

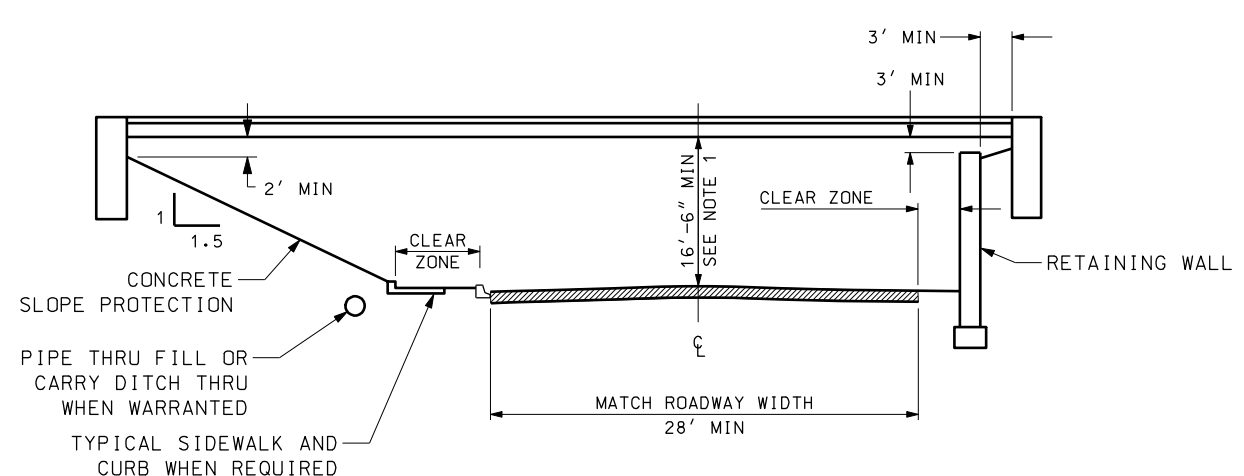
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| GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE H (PARABOLIC FLARE) | STANDARD DRAWING TITLE |
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| STD DWG | Doc |
| CC 9B | Page |
| | 1-3 |

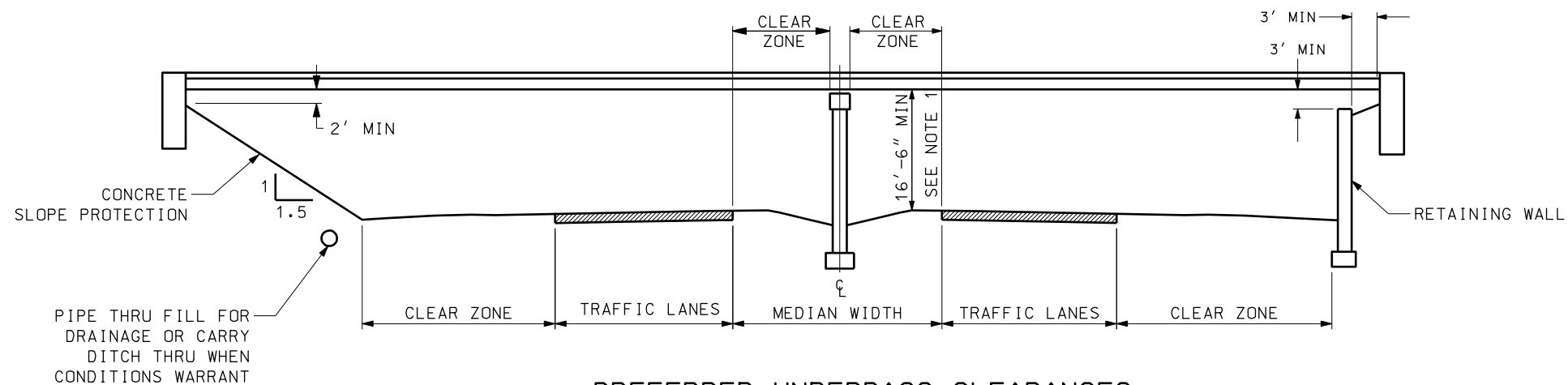
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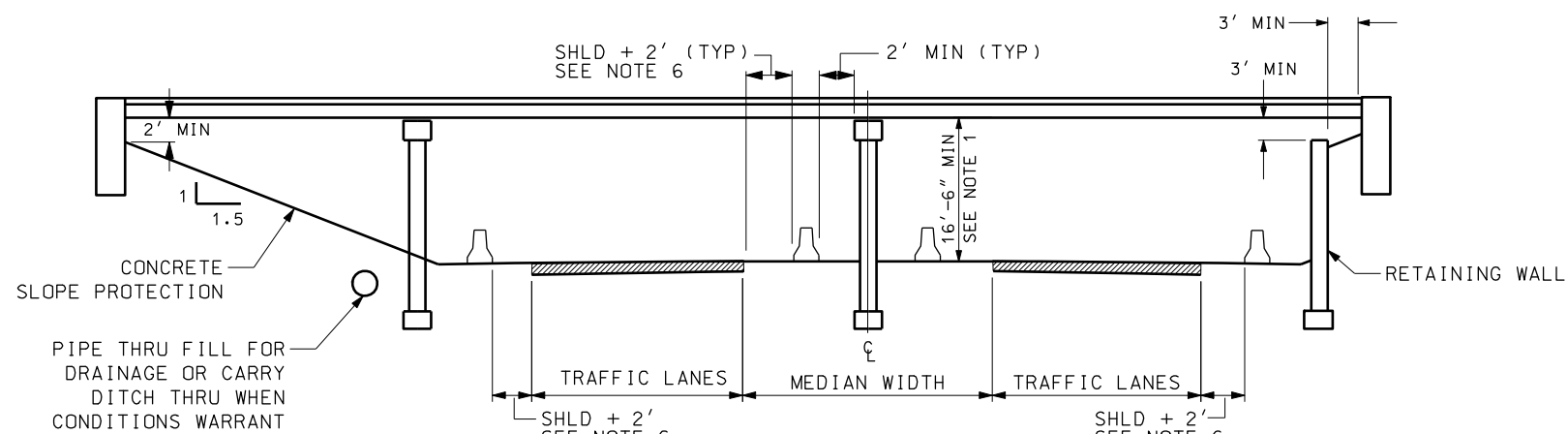
MINIMUM UNDERPASS CLEARANCES
(OTHER THAN FREEWAY OR MAJOR HIGHWAY)



PREFERRED UNDERPASS CLEARANCES
(OTHER THAN FREEWAY OR MAJOR HIGHWAY)



PREFERRED UNDERPASS CLEARANCES
(FREEWAY OR MAJOR HIGHWAY)



MINIMUM UNDERPASS CLEARANCES
(FREEWAY OR MAJOR HIGHWAY)

NOTES:

1. USE A RANGE OF 6" ALLOWED ABOVE THE MINIMUM CLEARANCE SHOWN EXCEPT WHEN OTHER GEOMETRIC CONSIDERATIONS GOVERN.
2. PROVIDE ADEQUATE PROTECTION FOR OBSTRUCTIONS WITHIN THE CLEAR ZONE.
3. PROVIDE A MINIMUM OF 17'6" VERTICAL CLEARANCE FOR PEDESTRIAN OVERPASSES AND OVERHEAD SIGN STRUCTURES.
4. USE CURRENT EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS.
5. FOR:
40 MPH AND UNDER
USE 4'-0" MINIMUM WITH CURB
USE 1/2 CLEAR ZONE WITHOUT CURB
45 MPH AND ABOVE
USE CLEAR ZONE OR BARRIER
6. WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

SUPPLEMENTAL DRAWING

| REVISIONS | | NO. | DATE | APPR. | REMARKS |
|-----------|----------|-----|------|-------|---|
| 1 | 10-30-08 | 1 | | | SEE ADDED NOTE 6 AND SEVERAL EDITORIAL UPDATES. |

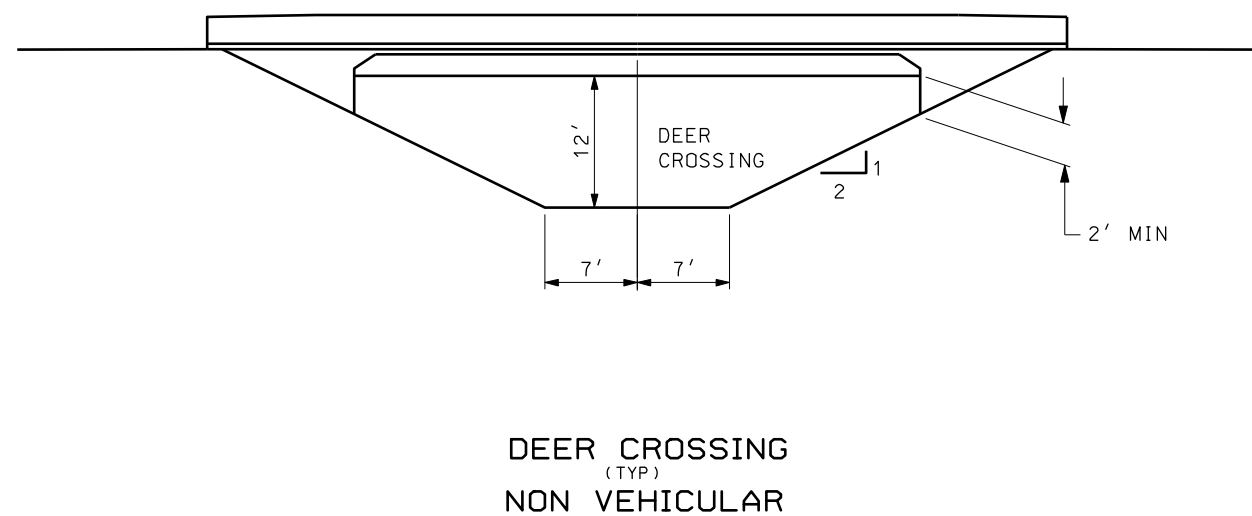
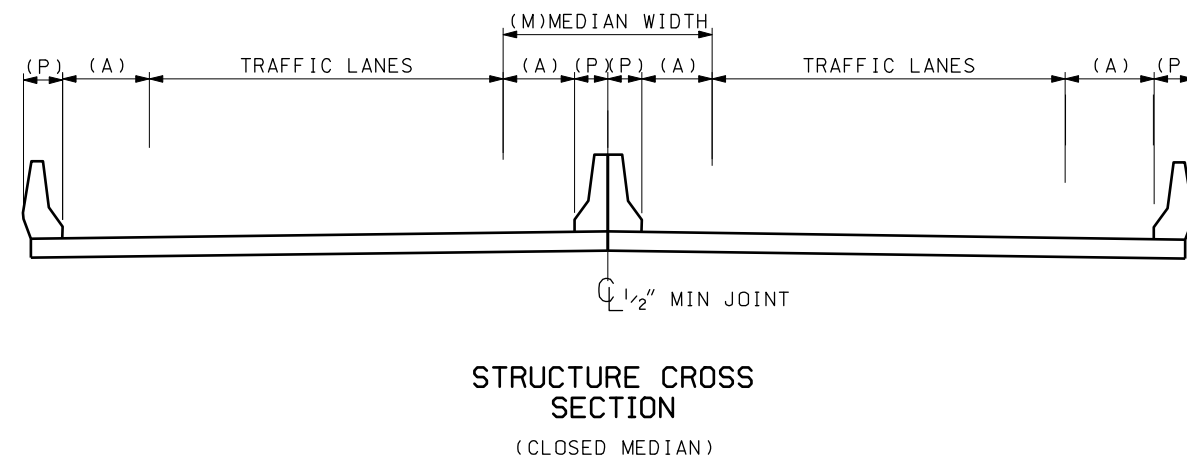
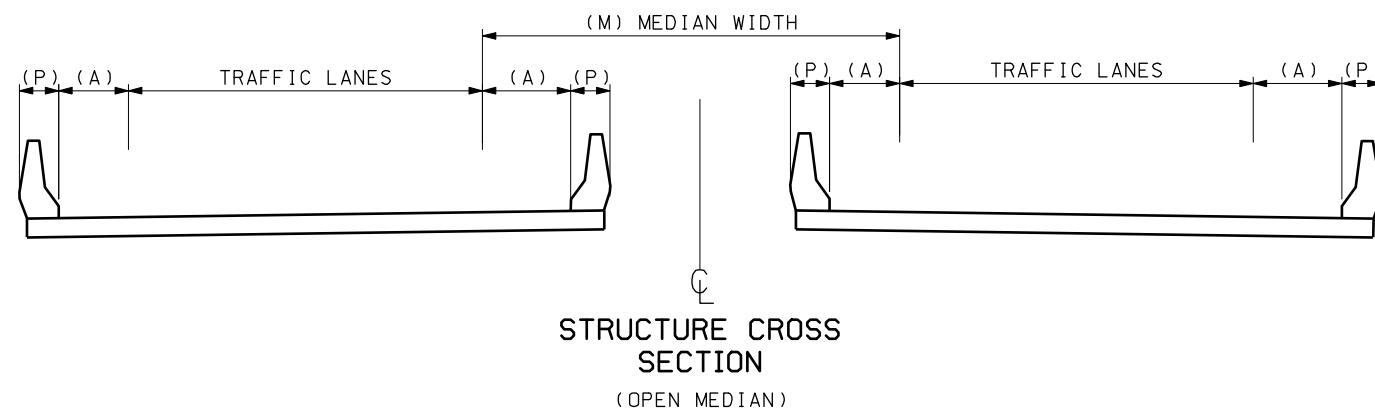
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| UTAH DEPARTMENT OF TRANSPORTATION | | STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | |
| RECOMMENDED FOR APPROVAL | | SALT LAKE COUNTY | |
| CHAIRMAN STANDARDS COMMITTEE | | APPROVED | |
| DEPUTY DIRECTOR | | DATE | |
| | | OCT.30.2008 | |
| | | DATE | |
| | | OCT.30.2008 | |

STRUCTURAL GEOMETRIC
DESIGN STANDARDS
FOR CLEARANCES

STD DWG
DD 8

STANDARD DRAWING TITLE

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LEGEND

(A) NORMAL SHOULDER PLUS 2'-0" FOR BARRIER OFFSET ON ALL ROADS AND RAMPS.

FOR TWO WAY SINGLE STRUCTURE MATCH ROADWAY WIDTH
PLUS 2'-0" BARRIER OFFSET EACH SIDE.

WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE
SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.

(M) WHEN MEDIAN WIDTH IS LESS THAN 30'-0" USE CLOSED MEDIAN STRUCTURE.

(P) PARAPET DIMENSION CONTROLLED BY SPECIFIC DESIGN.

| REVISIONS | | | |
|-----------|----------|-------|---------------|
| 1 | 10-30-08 | MEE | ADDED NOTE 1. |
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| NO. | DATE | APPR. | REMARKS |

~~UTAH DEPARTMENT OF TRANSPORTATION~~
~~STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION~~
~~SALT LAKE COUNTY~~

OCT.30.2008
DATE

OCT.30.2008
DATE

STRUCTURAL GEOMETRIC DESIGN STANDARDS

STANDARD DRAWING TITLE

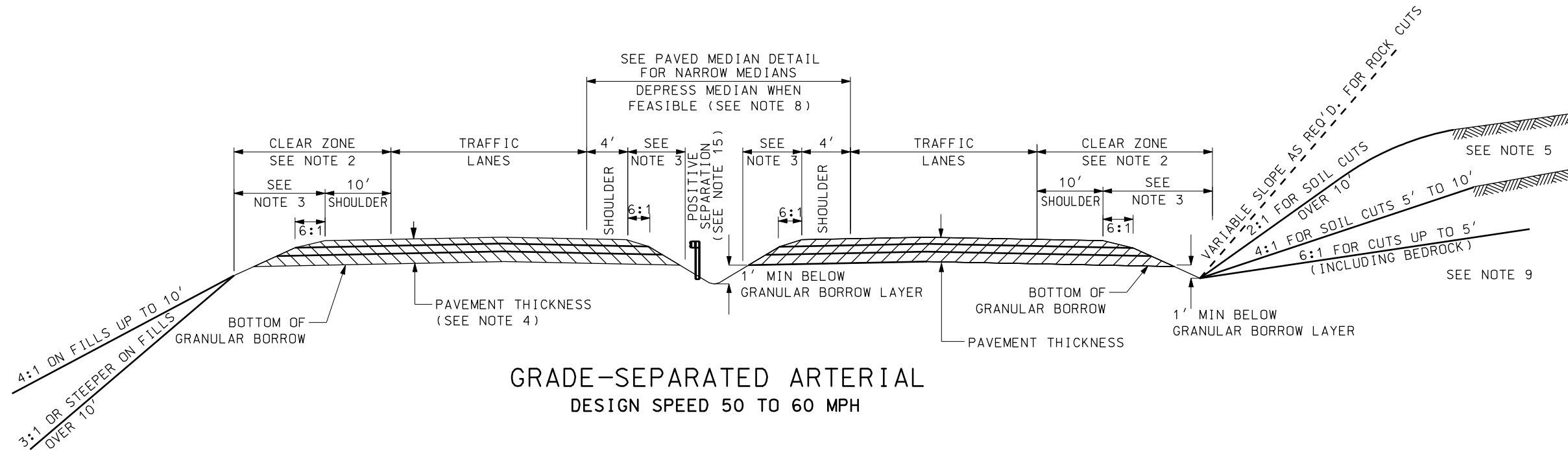
STD DWG

DD 9

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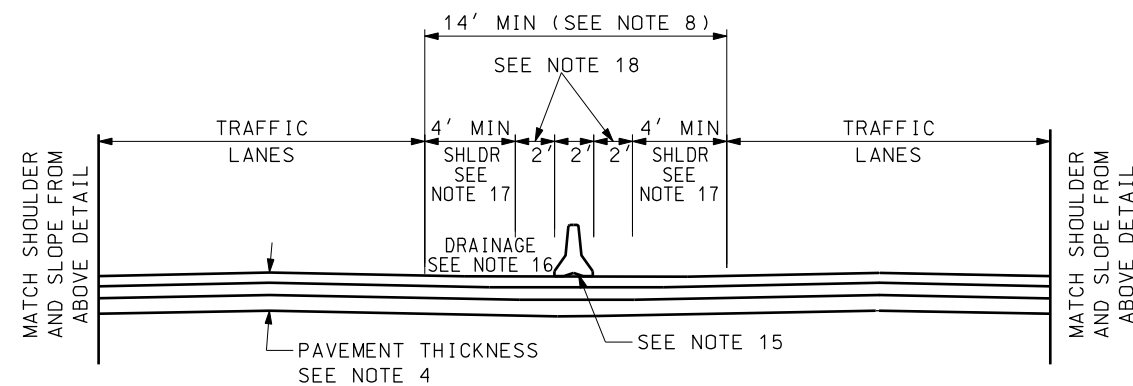
15-OCT-2008



GRADE-SEPARATED ARTERIAL DESIGN SPEED 50 TO 60 MPH

NOTES:

- USE THE CURRENT EDITION OF AASHTO: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS NOT SHOWN ON THIS STANDARD DRAWING.
- USE THE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS. CLEAR ZONE MAY EXTEND INTO CUT OR FILL SLOPES.
- MAINTAIN A 6:1 SLOPE FROM TOP OF PAVEMENT TO TOP OF UTBC. MAINTAIN CLEAR ZONE COMPLIANT SLOPES FROM THE TOP OF THE UTBC TO THE OUTER EDGE OF THE CLEAR ZONE IN FILL CONDITIONS. MAINTAIN A CONSTANT SLOPE FROM THE TOP OF THE UTBC TO THE BOTTOM OF THE GRANULAR BORROW LAYER OR PROVIDE OTHER MEASURES TO DRAIN ALL PAVEMENT THICKNESS LAYERS IN CUT CONDITIONS. MAINTAIN A MINIMUM OF ONE FOOT VERTICAL DISTANCE FROM THE BOTTOM OF THE GRANULAR BORROW LAYER TO THE BOTTOM OF THE CUT DITCH. THERE MAY BE CUT FORESLOPES AND BACKSLOPES IN THE CLEAR ZONE.
- PAVEMENT THICKNESS CONSISTS OF HARD SURFACING, UTBC, AND GRANULAR BORROW.
- INSTALL SURFACE DITCH (OPTIONAL) WHEN SHEET FLOW DRAINAGE IS TOWARDS CUT SLOPE. DRAIN SURFACE DITCH TO NATURAL DRAINAGE OR ROADSIDE DITCH. PROVIDE OTHER MEASURES TO PREVENT ERODING CUT SLOPES IF SURFACE DITCH IS OMITTED. SEE STD DWG DD 2 FOR DETAILS. ALSO SEE SLOPE ROUNDING DETAILS IN ROADWAY DESIGN MANUAL OF INSTRUCTION.
- SEE STD DWG DD 4 FOR TYPICAL DETAILS FOR SECTION ON CURVE AND SECTION ON TANGENT.
- SEE STD DWG DD 2 FOR TYPICAL SECTION ON DITCH FLARING AND BENCHED SLOPE.
- USE FLAT PAVED MEDIAN (10:1 OR FLATTER) WHERE MEDIAN IS NOT OF SUFFICIENT WIDTH TO PROVIDE A DEPTH OF 1 FOOT BELOW THE PAVEMENT THICKNESS.
- THE SLOPES SHOWN FOR CUT AND FILL HEIGHTS ARE SUGGESTED VALUES. SLOPES MAY DEVIATE FROM THESE SUGGESTED VALUES TO MEET PROJECT SPECIFIC REQUIREMENTS.
- RANGE OF SUPERELEVATION IS THE PAVED WIDTH.
- USE 2% MINIMUM CROSS SLOPES.
- PLACE ADVERSE SLOPE BREAKS AT SHOULDER OR LANE LINES IF APPLICABLE.
- USE 6% MAXIMUM ALGEBRAIC DIFFERENCE FOR SLOPE BREAKS BETWEEN SHOULDER AND LANE LINES.
- USE 4% MAXIMUM ALGEBRAIC DIFFERENCE FOR SLOPE BREAKS BETWEEN LANE LINES.
- POSITIVE SEPARATION IS REQUIRED FOR MEDIAN WIDTHS LESS THAN 50'. USE ANY ACCEPTABLE POSITIVE SEPARATION.
- PROVIDE UNDERGROUND DRAINAGE AT PAVED MEDIAN IF ROADWAYS HAVE A BREAK IN SLOPE THAT DIVERTS WATER TO THE MEDIAN.
- USE MINIMUM 4' MEDIAN SHOULDERS (8' DESIRABLE) FOR UP TO TWO TRAFFIC LANES IN EACH DIRECTION. USE MINIMUM 8' MEDIAN SHOULDERS FOR THREE OR MORE TRAFFIC LANES.
- WHEN ROADWAY DESIGN REQUIRES A 12' OR WIDER EFFECTIVE SHOULDER THE 2' MIN BARRIER OFFSET IS OPTIONAL.



PAVED MEDIAN DETAIL

REVISIONS

| NO. | DATE | APPR. | REMARKS |
|-----|----------|-------|--------------------------------------|
| 1 | 04-24-08 | RM | NEW DRAWING |
| 2 | 10-30-08 | ME | ADDED NOTE 18 AND EDITORIAL UPDATES. |

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL
CHAIRMAN STANDARDS COMMITTEE
DEPUTY DIRECTOR
OCT 30 2008
DATE
OCT 30 2008
DATE

GRADE-SEPARATED
ARTERIALS
OTHER THAN FREEWAYS
50 TO 60 MPH

STANDARD DRAWING TITLE

SUPPLEMENTAL DRAWING

STD DWG
DD 17

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Standards Committee Submittal Sheet

Name of preparer: Glenn Schulte Presenter: John Leonard

Title/Position of preparer: Transportation Safety Specialist

Specification/Drawing/Item Title: Pre-Cast Constant Slope Barrier

Specification/Drawing Number: Std. Dwg. BA 3C1 & BA 3C2

Enter appropriate priority level:

(See last page for explanation) 3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

The attached drawing were developed upon request from the UDOT Standards Committee, UDOT Maintenance Division and designers who wanted a taller barrier that could used as both a median application and a shoulder application. The previous design largely in use on UDOT projects was a wire loop design that had shown not to pass NCHRP 350 testing requirements (test conducted by other states). This design was never a standard and was used as a detail. A design developed by Texas DOT and tested by Texas DOT was approved for use by UDOT, some of the currently approved suppliers said they could not or would not manufacture the barrier due to constructability issue. One supplier offered as estimate which approached the cost of cast in place barrier.

In November of 2007 the drawing was rescinded from UDOT Standards.

- B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

A new pay item will have to be established

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

Acceptance and Documentation would follow the same procedures and requirements as established for the current pre-cast barrier elements.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg:::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

Submitted for review and comment. (Sept. 16, 2008) No Comments Received

ACEC Comments: (Use as much space as necessary.)

*Submitted for review and comment. (Sept. 16, 2008)
Technical comments were received from Mr. Tyler Yorgason. Drawing was revised October 1, 2008 and sent for further review by Mr. Yorgason,
October 2, Mr. Yorgason made additional comment, which were addressed.*

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Submitted for review and comment. (Sept. 16, 2008) Few comments were received from the Construction/Maintenance Engineers, those who did respond, responded with “no comment” except Rex Harris. His comment was “I’m in favor of it. It looks good to me.”

Kris Peterson offered technical changes.

Traffic Engineers:

*Submitted for review and comment. (Sept. 16, 2008) Few comments were received back. Troy Torgerson, R4, corrected technical information and suggestion that were addressed. Other responded back with “NO COMMENT”
Troy Torgerson sent additional comment, Oct. 9, 2008, minor issues, which have been addressed.*

Resident Engineers:

*Submitted for review and comment. (Sept. 16, 2008)
One response back, “no comment”*

Contractors (Any additional contacts beyond “C” above.)

Not sent to contractors, submittal has been sent to AGC for review and comment. (Sept. 16, 2008)

Suppliers

Originally sent to major precasters, as identified by the materials division in July 2008. Received no comments back so I contacted all for a response. After several weeks of no response I again contacted them. After discussion with all I finally got the following:

Mountain West Precast, Stephanie Loud, submitted technical changes and suggestion. She also stated: *“I am so glad UDOT is going to have a precast constant slope barrier. I will do anything I can to help you! I will bid it out, but it will take a little time.”*

Gerber Construction, Alan Gerber: submitted technical changes and suggestion.

Duracret, Scott: no responses to emails or phone calls.

Five Diamond Precast (Wadsworth Brothers), Greg Bradley

Received the following:

After reviewing the drawings cost alone would deter us from wishing to use this design. We would have to discard our current forms entirely and purchase new. Plus the added steel cost in connector loops and bar. Our preference would be to stay with the twenty-foot barrier design.

Resent for a final review Oct 1, 2008, no comments received back.

Consultants (as required) (Any additional contacts beyond “C” above.)

None

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Concept drawing were sent to Mr. Nick Artinovich and Mark Bloshock, FHWA Safety Office, Washington D.C. Both have responded positively.

From: <Nick.Artimovich@dot.gov>
To: <gschulte@utah.gov>
Date: 12/17/2007 1:54 PM
Subject: RE: Pre-Cast Single Slope Barrier

Glen:

This looks like something we can live with. I'll discuss the practical details with Mark Bloshock and if he agrees it's OK I'll assign an acceptance letter #

Nick

Mr. Mark Blochock, who was formally with FHWA Safety Office and TxDOT has extensive experience with safety feature, including all barrier systems. Mr. Bloshock reviewed drawing on October 7, 2008 and made minor technical changes and comments, which were addressed.

Local FHWA Office: *no response*

Others (as appropriate)

These drawing went out to 78 people within UDOT for input, included were maintenance, design and construction a total of 10 response were received back, most have been detailed above.

Structures, Fred Doehring and Jason Richins, have been involve with this design because it will make a difference on the type of connection installed on the ends of bridge parapets.

Addition changes will have to be made on Std. Dwgs. BA 3A1 and BA 3B to ensure that a proper connection can be made between these barrier systems. These drawings are owned by Traffic and Safety and changes can be made with little effort.

- E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)
1. Minimum Sampling and Testing Requirements
As per established procedures for other precast barrier system
 2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)

An additional pay item will have to be established

3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

Implementation should occur when all drawings affected by this new barrier system have been updated and approved.

- F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

All costs from 2007 Ave Bid List

| | |
|--|----------------------------------|
| <i>Precast Standard Barrier (Jersey Shape)</i> | <i>\$48.63 per foot (20037')</i> |
| <i>Cast in place Constant Slope Barrier</i> | <i>\$135.48 per foot (7842')</i> |
| <i>Old style Constant Slope</i> | <i>\$ 84.32 per foot (1373')</i> |

Only one supplier supplied an estimate the cost being \$47.00 per foot, construction cost only.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

No expected change

3. Life cycle cost.

No expected change

- G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.) (If no costs, what is the benefit of making this change?)

- H. Safety Impacts?

This system is expected to perform at the same level, if not better, as the current Jersey Shape barrier.

- I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

The previous design largely used on UDOT projects was a wire loop design that had shown not to pass NCHRP 350 testing requirements (test conducted by other states). This design was never a standard and was used as a detail. A design developed by Texas DOT and tested by Texas DOT was approved for use by UDOT. Due to constructability issues many of the currently approved suppliers said they could not or would not manufacture the barrier. In November of 2007 the drawing was rescinded from UDOT Standards.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

- | | |
|------------|---|
| Priority 1 | Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised. |
| Priority 2 | Upon posting, this impacts projects being advertised. |
| Priority 3 | Upon posting, the approved standard takes effect four weeks later for projects being advertised. |

| | | | | |
|---------------------|------------------|--------------|---------------|---|
| Std Dwg/Spec Number | BA C1 & BA C2 | Sheet 1 | of | 5 |
| Date: | October 10, 2008 | Facilitator: | Glenn Schulte | |

Review Comments Form

| Item No. | Reviewer | Sheet/Sec. No. | Comment | Review Mtg. Action | Final Action. |
|----------|---|-----------------|---|--|---------------|
| 1 | Tyler Yorgason | BA 3C1 & BA 3C2 | <p>ACEC Comments:</p> <p><i>Submitted for review and comment. (Sept. 16, 2008) Technical comments were received from Mr. Tyler Yorgason.</i></p> <p><i>October 1, 2008: sent for further review by Mr. Yorgason,</i></p> <p><i>October 2, Mr. Yorgason made additional comment, which were addressed</i></p> <p><i>Response: Drawings were revised as recommended by Mr. Yorgason</i></p> | Emails and phone conversation conducted between Mr. Yorgason & Glenn Schulte | A |
| 2 | Construction/ Maintenance Engineers Rex Harris Kris Peterson | BA 3C1 & BA 3C2 | <p><i>Submitted for review and comment. (Sept. 16, 2008) Few comments were received from the Construction/Maintenance Engineers, those who did respond, responded with "no comment".</i></p> <p><i>Rex Harris comment was "I'm in favor of it. It looks good to me."</i></p> <p><i>Kris Peterson offered technical changes.</i></p> <p><i>Response: Addressed Kris's concerns</i></p> <p><i>No comments back to Rex.</i></p> | Glenn Schulte | A |
| 3 | Traffic Engineers Troy Torgerson Ann Ogden Doug Bassett | BA 3C1 & BA 3C2 | <p><i>Submitted for review and comment. (Sept. 16, 2008) Few comments were received back.</i></p> <p><i>Troy Torgerson, R4, corrected technical information</i></p> <p><i>Troy Torgerson phoned in additional comment, Oct. 9, 2008, minor technical issues</i></p> <p><i>Ann Ogden: offered grammatical changes</i></p> <p><i>Doug Bassett: No Comment</i></p> <p><i>Response: Troy Torgerson: drawings were revised as recommended and issues addressed.</i></p> <p><i>Ann Ogden: changes made</i></p> <p><i>Doug Bassett: none</i></p> | Phone calls & emails Glenn Schulte | A |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--------------------------|--------------|----------------------|---|
| Std Dwg/Spec Number | BA C1 & BA C2 | Sheet 2 | of | 5 |
| Date: | October 10, 2008 | Facilitator: | Glenn Schulte | |

| | | | | | |
|---|------------------------------------|-----------------------|---|--|--|
| 4 | Resident Engineers Fred Jenkins | BA 3C1 & BA 3C2 | Submitted for review and comment. (Sept. 16, 2008) One response back, "no comment" | | |
| | | | Response: none | | |

In July 2008 the initial draft was sent to major precasters, as identified by the Materials Division. One of the suppliers, Mt. West Precast, responded with comments, I contacted the others for a response. After several weeks of no response I again contacted them. After discussion with all a resend of the documents was made in August, again I received only one response. I contacted all again and requested they do a review. Comments were addressed and the draft document for submittal to Standards Committee was sent September 16, 2008.

| | | | | | |
|---|---|-----------------------|---|---------------|--|
| 5 | Five Diamond Precast (Wadsworth Brothers) | BA 3C1 & BA 3C2 | Five Diamond Precast (Wadsworth Brothers), Greg Bradley No responses to July or August requests. <i>Received the following from September request:</i> "After reviewing the drawings cost alone would deter us from wishing to use this design. We would have to discard our current forms entirely and purchase new. Plus the added steel cost in connector loops and bar. Our preference would be to stay with the twenty-foot barrier design." <i>October: with revision made from suggestions of others, no comments received.</i> Response: left several phone calls to Mr. Bradley, received no return call. | Glenn Schulte | |
|---|---|-----------------------|---|---------------|--|

| | | | | | |
|---|---------------------|-----------------------|--|---|---|
| 6 | Gerber Construction | BA 3C1 & BA 3C2 | Gerber Construction, Alan Gerber: <i>August: submitted technical changes and suggestion.</i> <i>September: no comments received</i> <i>October: with revision made from suggestions of others, no comments received.</i> Response: addressed concerns with drawing and revisions made | Emails & phone conversations Glenn Schulte | A |
|---|---------------------|-----------------------|--|---|---|

| | | | | | |
|---|-----------|-----------------------|--|---|--|
| 7 | Duracrete | BA 3C1 & BA 3C2 | Duracret, Scott: no responses to emails or phone calls to any of the request made. Response: | Emails & phone conversations Glenn Schulte | |
|---|-----------|-----------------------|--|---|--|

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|------------------|--------------|---------------|---|
| Std Dwg/Spec Number | BA C1 & BA C2 | Sheet 3 | of | 5 |
| Date: | October 10, 2008 | Facilitator: | Glenn Schulte | |

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|---|-----------------------|-----------------|---|--|---|
| 8 | Mountain West Precast | BA 3C1 & BA 3C2 | <p>Mountain West Precast, Stephanie Loud, <i>August: submitted technical changes and suggestion. She also stated: "I am so glad UDOT is going to have a precast constant slope barrier. I will do anything I can to help you! I will bid it out, but it will take a little time."</i> <i>September: no comments received</i> <i>October: with revision made from suggestions of others, no comments received.</i></p> | <p>Emails & phone conversations</p> <p>Glenn Schulte</p> | A |
| | | | Response: <i>addressed concerns with drawing revisions from initial request</i> | | |

| | | | | | |
|---|---|-----------------|---|---|---|
| 9 | Other Contacts Structures Division Fred Doehring Jason Richin Phil Pool | BA 3C1 & BA 3C2 | <p><i>These drawing were discussed extensively with Structures Division during initial development, to insure the connection could be made between the barrier and bridge parapet. Jason and Phil presented it to Fred. Fred's initial response was what is the benefit of changing the connection to the bridge for a new barrier system.</i></p> <p>Response: I had a conversation with Fred explaining Standards and others in the department requested the design. That I had done the research to develop the connection, based on another states design and that it had preliminary support from FHWA Safety Office. Based on the preliminary support I was coordinating with his division to insure when this system is called for that a positive connection could be made between the system and a bridge parapet with a constant slope profile. Fred appeared to be ok with the explanation.</p> <p>Jason Richins has helped in getting the proper steel requirements and layout for the barrier system.</p> <p>Phil Pool and I have been coordinating to include a proper bridge connection can be made between barrier system and bridge.</p> | <p>On site conversations</p> <p>Glenn Schulte</p> | A |
|---|---|-----------------|---|---|---|

| | | | | | |
|----|---|-----------------|---|------------------------------------|---|
| 10 | Nick Artimovich FHWA Highway Safety Engineer | BA 3C1 & BA 3C2 | <p>This looks like something we can live with. I'll discuss the practical details with Mark Bloschock and if he agrees it's OK I'll assign an acceptance letter #</p> <p>See line 11 for Mark's comments.</p> | <p>Emails</p> <p>Glenn Schulte</p> | A |
| | | | Response: | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|--------------------------|--------------|----------------------|---|
| Std Dwg/Spec Number | BA C1 & BA C2 | Sheet 4 | of | 5 |
| Date: | October 10, 2008 | Facilitator: | Glenn Schulte | |

| | | | | | |
|----|---|------------------------------------|--|---|--|
| 11 | <p>Mark Bloschok</p> <p>Former: TxDOT Special Projects Engineer</p> <p>Former: FHWA Highway Safety Engineer</p> | <p>BA 3C1 & BA 3C2</p> | <p>The following remarks were those addressed to Nick Artinovich of FHWA Safety Office, Washington D.C.</p> <p>I still do not like pin and loop barriers; much better can be done in the area of dynamic deflection for the same money.</p> <p>Even though I don't like pin and loop, there are worse median barriers out there than the subject UDOT barrier. In support of the subject barrier, it does sport some mighty robust loops and a substantial pin. In my view, if the pin is installed in the loops, these two items will not be involved in the mode of ultimate barrier failure and/or breach. The standard does not claim to be a crash tested design and does not state a dynamic deflection, which makes sense since a dynamic deflection is not known at this time. Do you agree that this barrier has not been crash tested?</p> <p>The standard does not claim to be a crash tested design and does not state a dynamic deflection, which makes sense since a dynamic deflection is not known at this time. Do you agree that this barrier has not been crash tested?</p> <p>The standard is a well drawn and clear-to-understand, even for the eyes of this aging engineer.</p> <p>The general notes make it easy for fabricators and field inspectors to follow the intent of the details.</p> <p>Now that I think about it, there ought to be note that restricts the use of the barrier from use on a bridge edge during the construction phase due to the slide following impact, unless it is pinned to the deck. What do you think? One ft...two feet behind the barrier?</p> <p>The bridge deck pins ought to be on both sides of the barrier segments if the barrier is placed on the edge of a bridge slab and if there is lower roadway traffic.</p> <p>Similar to TxDOT's testing of an F-shape X-bolt barrier and the subsequent TxDOT acceptance of a much heavier, Single Slope X-bolt without further crash testing, this UDOT barrier might be afforded the same consideration should UDOT ask for an FHWA acceptance letter, however....Since I don't think that it is a crash tested design, is there sufficient precedent to require a provisional acceptance that asks UDOT to collect and report any crash data from those impacts with the new barrier for a period not to exceed two years? After that time, Glenn will have really retired. But before he does, the provisional period of performance report should be compiled and completed, sent to HSSD and pending your OK, a full acceptance should be granted if the performance is as expected. What do you think?</p> | <p>Emails, phone, and personal conversations</p> <p>Glenn Schulte</p> | |
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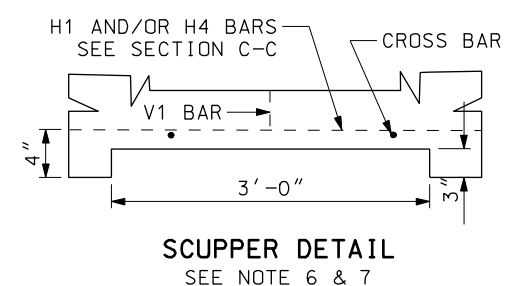
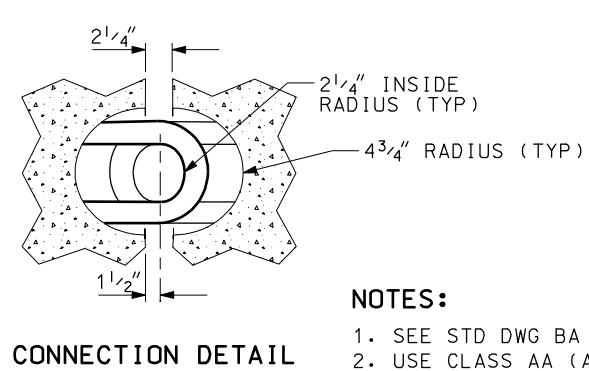
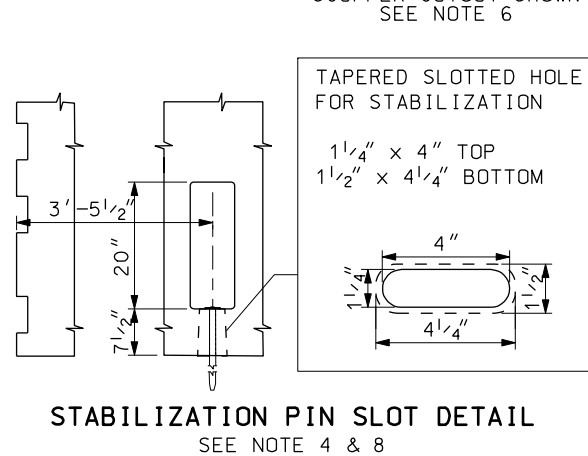
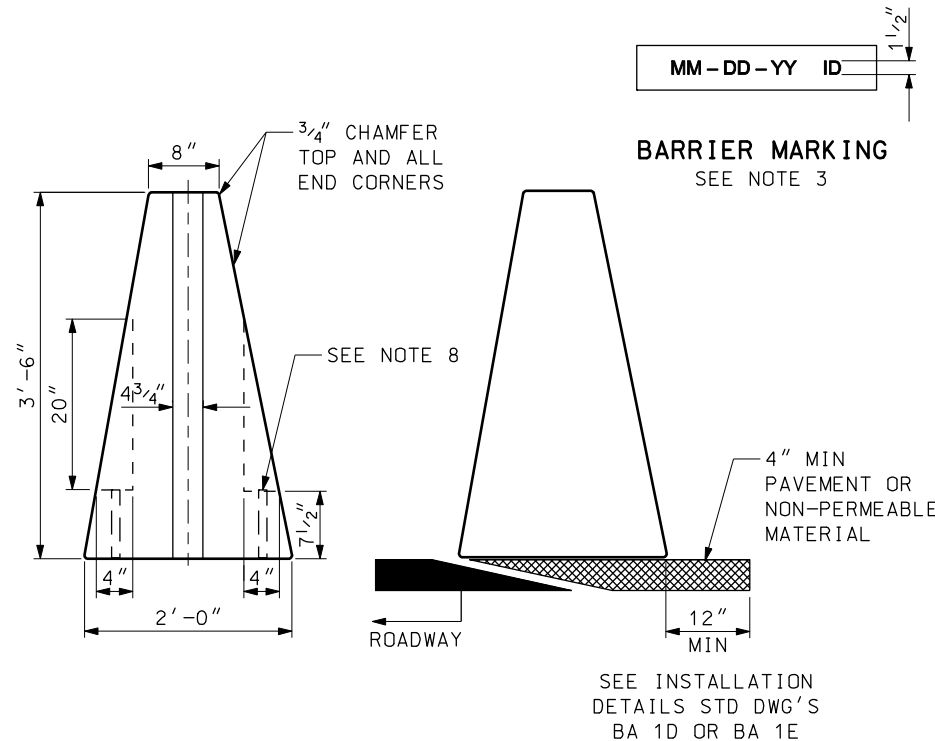
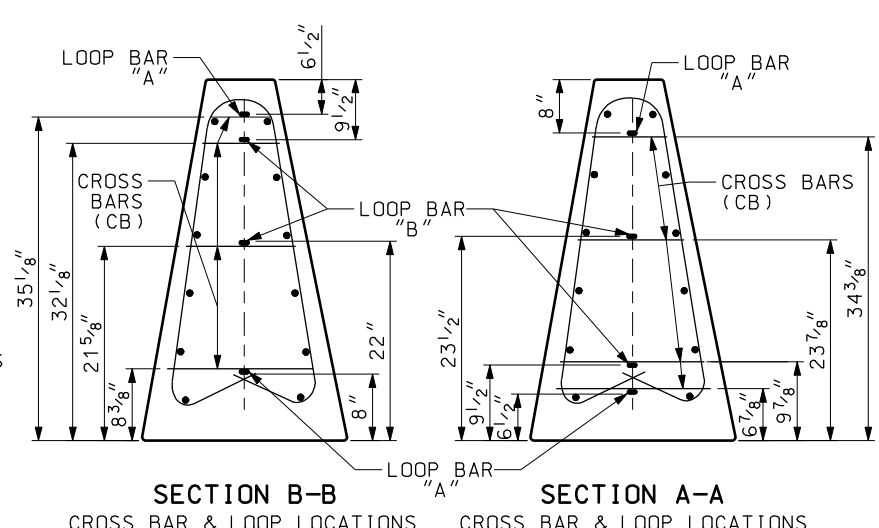
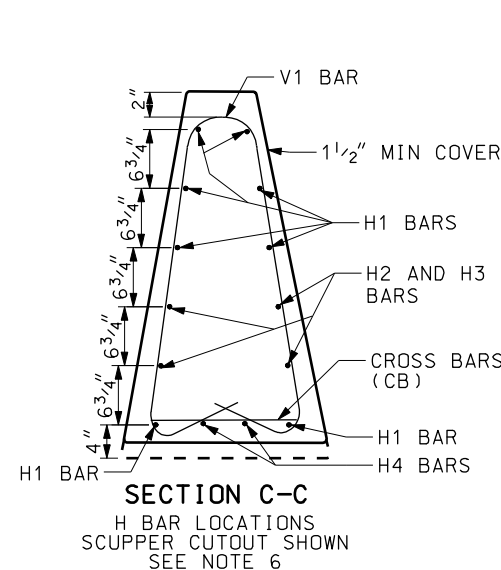
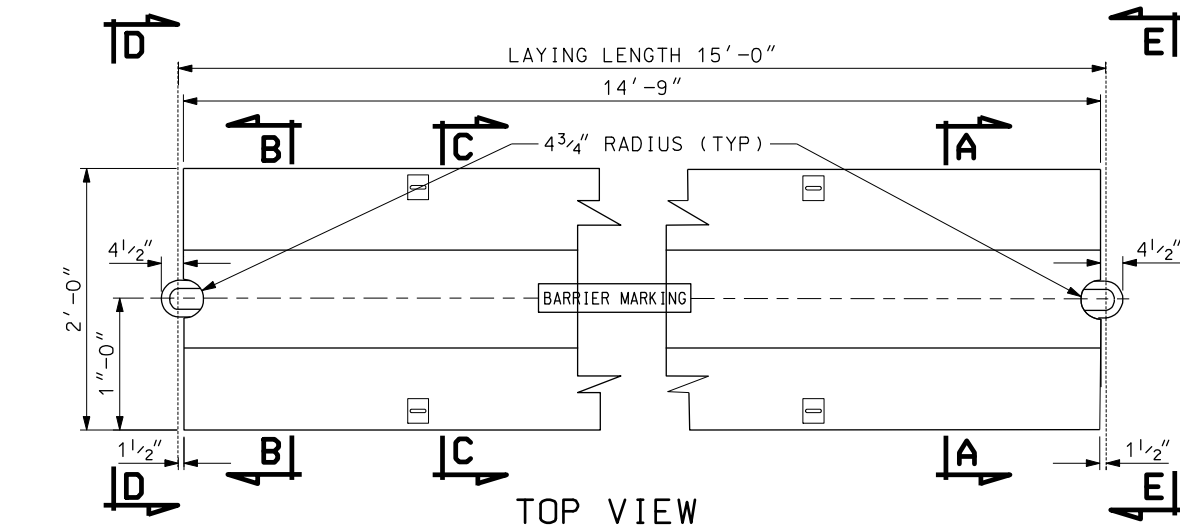
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| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

| Standard Drawing/Specification Review Sheet | | Review Comments | | |
|---|--------------------------|-----------------|----------------------|---|
| Std Dwg/Spec Number | BA C1 & BA C2 | Sheet 5 | of | 5 |
| Date: | October 10, 2008 | Facilitator: | Glenn Schulte | |

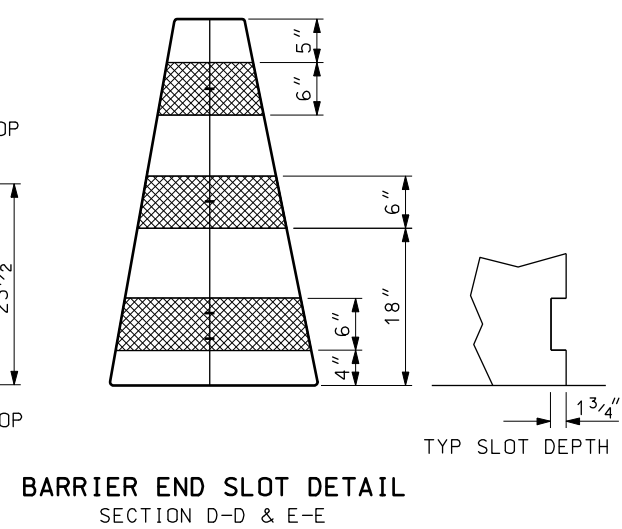
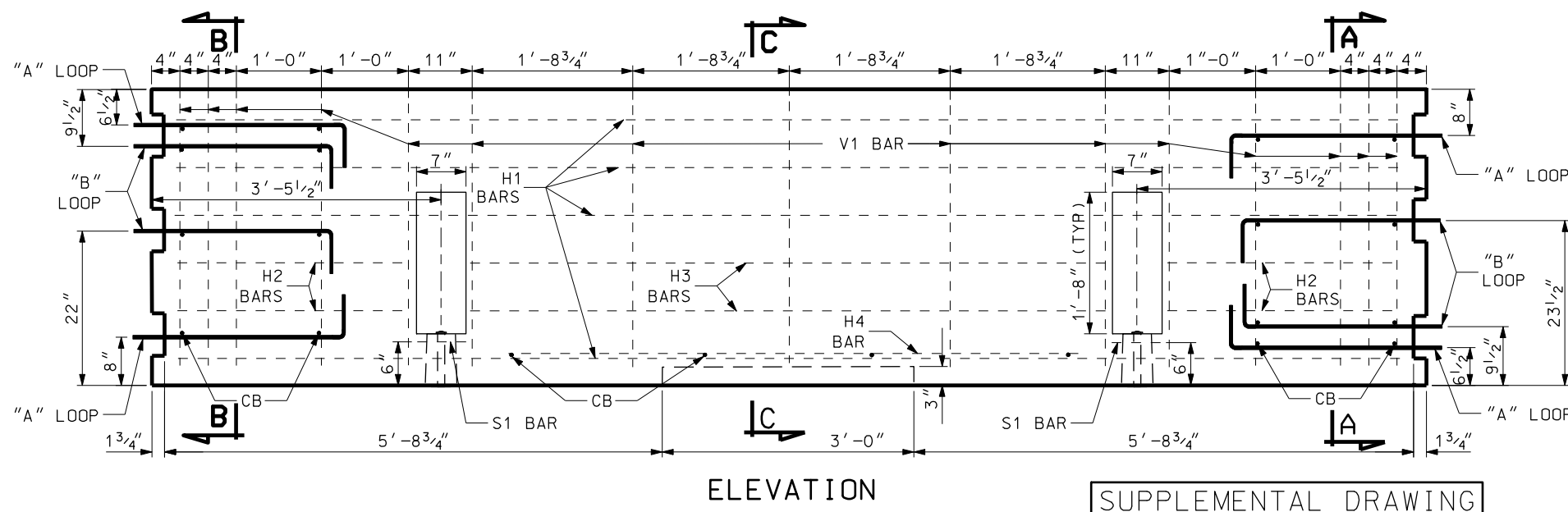
| | | | | | |
|--|--|--|--|--|--|
| | | | <p>Response made to Mark & Nick, In response to our phone conversation I have attached two drawings that indicate the area required behind a jersey style concrete barrier. These are the drawings that are referenced in Note 4 of my proposed Constant Slope design (just noticed the note has BA 1C & BA 1D, will be corrected). I attached the constant slope drawing in my previous email.</p> <p>During a construction phase we typically close the lane for construction and I have never seen us place traffic on the parapet side of a bridge unless the parapet is completed. I have received several requests to do so but when I tell them they have to pin it into the new deck they always choose another option.</p> <p>As to the provisional acceptance, that would be a great way to proceed, I don't really know when I will be retiring with the economy going as it is, but I do believe the data can be collected. I will put that in my comments to Std. Committee as a requirement for full acceptance.</p> | | |
|--|--|--|--|--|--|

| Action Code | A | B | C | D |
|-------------|------------------------------|------------------------------|-----------------------|---------------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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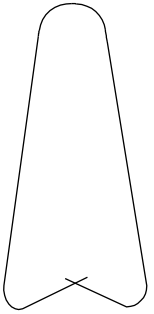

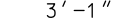
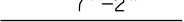
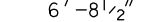

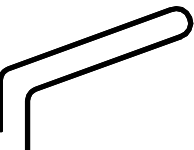
- NOTES:
1. SEE STD DWG BA 3C2 FOR STEEL REQUIREMENTS.
 2. USE CLASS AA (AE) CONCRETE.
 3. MARK EACH BARRIER SECTION WITH 1 1/2" TALL NUMBERS INDICATING THE DATE OF CASTING AND IDENTIFICATION NUMBER SUPPLIED BY INSPECTOR, IMPRESSED 1/4" INTO TOP OF BARRIER.
 4. SEE STD DWGS BA 1D AND BA 1E FOR PLACEMENT REQUIREMENTS AND STABILIZATION PIN USE REQUIREMENTS.
 5. PRE-DRILL A 1" DIA. HOLE THROUGH ROADWAY SURFACE PRIOR TO INSTALLING STABILIZATION PIN.
 6. INDICATE ON PLAN WHEN BARRIER SECTION WITH SCUPPERS ARE REQUIRED.
 7. PROVIDE BLOCK OUT AND ADDITIONAL REINFORCING STEEL FOR SCUPPERS WHEN NOTED ON PLANS. H-4 BARS NOT REQUIRED FOR BARRIER SECTION WITHOUT SCUPPER.
 8. CENTER PIN SLOT IN BLOCK OUT.

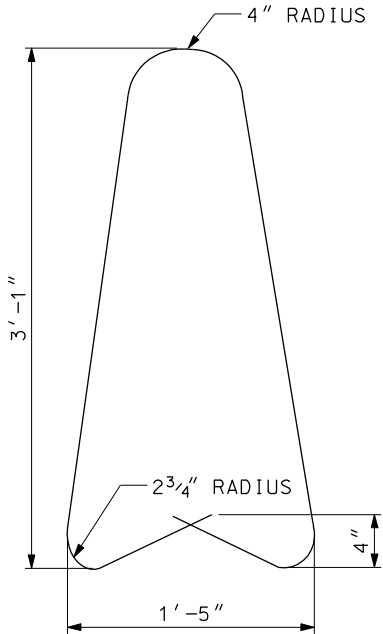


| REVISIONS | | DATE | | | | REMARKS | |
|-----------|----------|------|--------------|--|--|---------|--|
| 1 | 10-30-08 | GS | NEW DRAWING. | | | | |

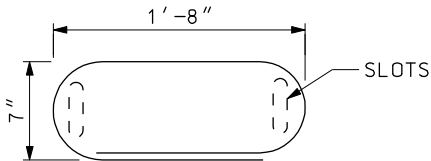
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| UTAH DEPARTMENT OF TRANSPORTATION | | STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION | | RECOMMENDED FOR APPROVAL | | CHAIRMAN STANDARDS COMMITTEE | | DEPUTY DIRECTOR | |
| SAINT LAURENCE | | OCT.30.2008 | | DATE | | OCT.30.2008 | | DATE | |
| PRECAST CONSTANT SLOPE BARRIER | | STD DWG | | BA 3C1 | | Page | | 13 | |
| STANDARD DRAWING TITLE | | 14-OCT-2008 | | BA 3C1 | | Page | | 13 | |

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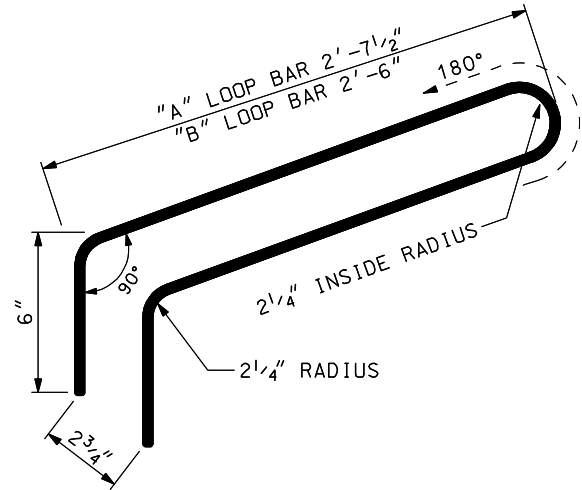
| STEEL REINFORCEMENT TABLE | | | | |
|---------------------------|---------------|-----------------|------------|--|
| SEE NOTE 1 | | | | |
| BAR MARK | BAR SIZE | NUMBER REQUIRED | BAR LENGTH | SKETCH |
| V1 BARS | BAR SIZE #5 | 15 | 8'-0" |  SEE V1 DETAIL |
| H1 BARS | #5 | 8 | 14'-5" |  |
| H2 BARS | #5 | 8 | 3'-1" |  |
| H3 BARS | #5 | 4 | 7'-2" |  |
| H4 BARS | #5 | 2 | 6'-8 1/2" |  |
| CROSS BARS (CB) | #4 | 20 | | SIZE VARIES BASED ON LOCATION-CUT TO LENGTH |
| S1 BARS | #4 | 2 | 5'-1" |  SEE S1 DETAIL |
| LOOP BARS "A" | 3/4 STEEL BAR | 4 | 6'-6 1/2" |  SEE LOOP BAR DETAILS |
| LOOP BARS "B" | 3/4 STEEL BAR | 4 | 6'-3 1/2" | |



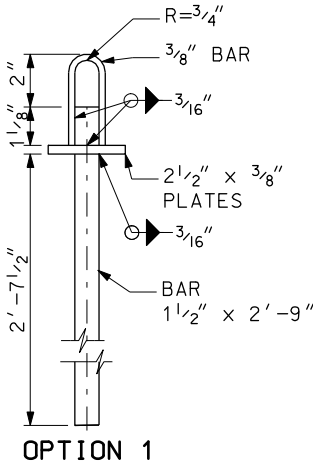
V1 BAR DETAIL



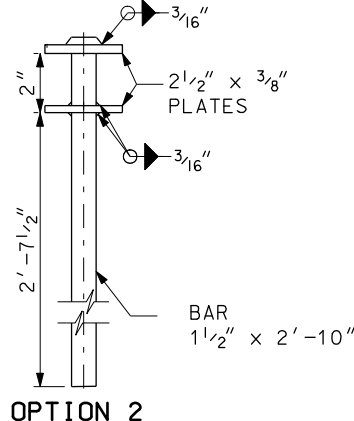
S1 BAR DETAIL



"A" & "B" LOOP BAR DETAILS
GALVANIZED STEEL ROUND
SEE NOTES 2, 3, 4

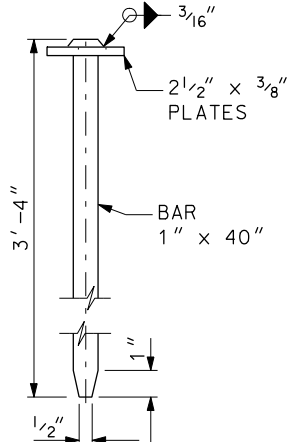


OPTION 1



OPTION 2

CONNECTION PIN
DETAILS
SEE NOTES 2, 3, 5



STABILIZATION PIN
DETAIL
SEE NOTES 2, 3, 5

NOTES:

1. MEET STD SPECIFICATION 03211 FOR REINFORCING STEEL REQUIREMENTS. USE COATED BAR.
2. USE STEEL ROD MEETING AASHTO M-31 GRADE 60.
3. HOT DIP GALVANIZE LOOP BARS, CONNECTION PINS AND STABILIZATION PINS AFTER MANUFACTURING.
4. DO NOT HEAT REINFORCING STEEL OR LOOP BAR TO MAKE BENDS.
5. USE OF FORGED HEAD MEETING PLATE SIZE AND THICKNESS IS ACCEPTABLE IN PLACE OF WELDED PLATE.

SUPPLEMENTAL DRAWING

| | | | | | | | | | |
|--|----------|-----|--------------|------|--|-------|--|---------|--|
| REVISIONS | | NO. | | DATE | | APPR. | | REMARKS | |
| 1 | 10-30-08 | CS | NEW DRAWING. | | | | | | |
| UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE COUNTY RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE APPROVED DEPUTY DIRECTOR | | | | | | | | | |
| PRECAST CONSTANT SLOPE BARRIER | | | | | | | | | |
| STANDARD DRAWING TITLE | | | | | | | | | |
| STD DWG BA 3C2 | | | | | | | | | |
| Doc Page 124 | | | | | | | | | |

Standards Committee Submittal Sheet

Name of preparer: Wes Starkenburg

Title/Position of preparer: Operations Design Engineer

Specification/Drawing/Item Title: Project Notification and Lane Gain Signs

Specification/Drawing Number: TC 4E and TC 4F

NOTE: Six drawings numbered SN 15A, SN 15B, SN 15C, SN 15D, SN 15E, SN 15 F were submitted for review, as shown on the comment form. Several comments noted that the sheets should be combined into 2 sheets. Other comments noted that the sheets should be included in the TC Drawings. These change were made and the new drawings were numbered TC 4E and TC 4F.

Enter appropriate priority level:

(See last page for explanation) 3

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:

1. All Submittal Sheets must be completed and sent to the Standards Section by the Standards Committee suspense date as shown on the Web.
(<http://www.udot.utah.gov/go/standardscommittee>)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

- A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

“Project Notification Signs” and “Lane Gain Project Notification Signs” are used on most projects. These signs have standard format and messages. One of three sizes is used depending on the category of the road.

Currently, when these signs are required, they are detailed by the designer, and then included in project plans.

Including these signs in the standard drawings can help assure that the signs used have the correct message, format, and size.

B. Measurement, Payment, Acceptance, and Documentation:

1. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

The drawings will be in the TC drawings. They will be paid as part of traffic control.

2. How is Acceptance and Documentation handled? Existing (from the acceptance and documentation document), modified, or new acceptance and documentation to be included with all Standard Specifications or Supplemental Specifications. Include Contractor Submittals, Inspection Elements, and Documentation.

Acceptance and documentation will be the same as when the signs were included in the plans.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at <http://www.udot.utah.gov/main/f?p=100:pg::::1:T,V:659> for the respective e-mail addresses.

AGC Comments: AGC made 1 comment as noted on the comment form

ACEC Comments: ACEC made 6 comments as shown on the comment form.

- D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders: See attached email of who were contacted

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Submitted to Resident Engineers for review and comment.

Contractors (Any additional contacts beyond “C” above.)

Not sent to contractors, submittal has been sent to AGC for review and comment.

Suppliers.

Sent to Interwest Safety Supply, who has a contract to supply signs to UDOT.

They made 1 comment

Consultants (as required) (Any additional contacts beyond “C” above.)

Not sent to consultants, has been sent to ACEC for review and comment.

FHWA (To be accomplished as part of the two-week process before submitting to the Standards for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Sent to Roland Stanger for review and comment.

Received Roland’s comments as shown on the comment form

Others (as appropriate)

None.

E. Other impacted areas, systems, or personnel. (Consider all impacts and possible changes to these areas during the preparation process. Coordinate with all appropriate areas for the respective item. List all impacts and action taken.)

1. Minimum Sampling and Testing Requirements

Sampling and testing will not change from before, when these signs were included in the plans.

2. Business Systems (Electronic Bid System, Project Development Business System, Electronic Program Management, Computer-Aided Drafting and Design, etc.)

Business systems will not be changed from when these signs were included in the plans.

3. Implementation Plan (Provide detailed instructions on how the subject item will be implemented to include notification of all interested parties and training requirements.)

Designers will change from including signs in the plans, to indicating on the plans that the standard drawings for these signs are included as part of the plans. Per a note on the standard drawings, the contractor will obtain the legend required from the Engineer.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

Costs should be reduced with more standardization of these signs.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

No change to operational costs. As before, contractors will maintain these signs for the duration of a construction project.

3. Life cycle cost.

Life cycle costs may be reduced due to lower initial costs.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.)
(Estimates are acceptable.) (If no costs, what is the benefit of making this change?)

Unquantifiable benefit due to standardization and resultant fewer errors on signs.

Unquantifiable cost savings may result. It is not feasible to calculate a cost/benefit ratio

H. Safety Impacts?

There may be a slight increase in safety from standardizing messages and reducing driver confusion.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

No specific history regarding these items. Historically, standardizing frequently used items has been beneficial.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | Sheet 1 | of | 6 |
| Date: | October 9, 2008 | Facilitator: | Wes Stakenburg | |

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Review Comments Form

| Item No. | Reviewer | Sheet/Section No. | Comment | Review Mtg. Action | Final Action. |
|----------|----------------|-------------------|---|--------------------|---------------|
| 1 | Troy Torgersen | SN 15A – SN 15F | Various comments re dimensions, See attached PDF Response: | | |
| 1 – 1.1 | Troy Torgersen | SN 15A – | Gap from top of border to bottom of blue background is 2". Dimension of telephone number is 4". These appear the same. Show dimensions correctly Response: Signs are made in three sizes. This means that signs are shown schematically and will not be proportional to all dimensions | | |
| 1 – 1.2 | Troy Torgersen | SN 15A – | Comments on this sign apply to all. Response: Will apply comments to all | | |
| 1 – 1.3 | Troy Torgersen | SN 15A – | Indicate how wide blue background is. Response: Sum of dimensions from edge of sign to black border + width of border + dimension from border to blue background will provide this information | | |
| 1 – 1.4 | Troy Torgersen | SN 15A – | What are dimensions for "UDOT" logo and "Connecting Communities" logo Response: UDOT Traffic and Safety has these logos, which will be scaled to fit each sign and given to sign maker. Contractor will request this info through the Engineer. | | |
| 1 – 1.5 | Troy Torgersen | SN 15A – | Blank Response: | | |
| 1 – 1.6 | Troy Torgersen | SN 15A – | Show as 2009 Response: Leave as is. Using a past date will emphasize that these signs are schematic and that project specific text must be requested through the Engineer. | | |
| 1 – 1.7 | Troy Torgersen | SN 15A – | Show dimension from edge of sign to black border Response: This is shown on the lower right corner. Border and indent is the same all around the sign. | | |
| 1 – 2.1 | Troy Torgersen | SN 15B – | Show 3" gap and 8" letter to correct scale Response: Signs are made in three sizes. This means that signs are shown schematically and will not be proportional to all dimensions | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | Sheet 2 | of | 6 |
| Date: | October 9, 2008 | Facilitator: | Wes Stakenburg | |

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| | | | | | |
|---------|----------------|----------|---|---|--|
| 1 – 2.2 | Troy Torgersen | SN 15B – | Correct extraneous lines in numeral 6 Response: Confirmed this problem does not exist in full size layouts used by sign shops | | |
| 1 – 3.1 | Troy Torgersen | SN 15C - | This should be 1/3 height of telephone number Response: Signs are made in three sizes. This means that signs are shown schematically and will not be proportional to all dimensions | | |
| 1 – 3.2 | Troy Torgersen | SN 15C – | Correct extraneous line on numeral 8 Response: Will confirm this problem does not exist in full size layouts used by sign shops | | |
| 1 – 4.1 | Troy Torgersen | SN 15D – | Correct extraneous lines in numeral 6 Response: Confirmed this problem does not exist in full size layouts used by sign shops | | |
| 1 – 4.2 | Troy Torgersen | SN 15D | Indicate size of lanegain logo Response: Response: UDOT Traffic and Safety has these logos, which will be scaled to fit each sign and given to sign maker. Contractor will request this info through the Engineer. | | |
| 1 – 4.3 | Troy Torgersen | SN 15D | Evaluate if 3” text can be read at highway speeds Response: 3” was max available space. As these are informational, not guide or regulatory, they should be OK | | |
| 1 – 4.4 | Troy Torgersen | SN 15D | Background prints differently. Response: Signs are schematic | | |
| 1 – 4.5 | Troy Torgersen | SN 15D | Change lines so ¾” is not blocked Response: Did this using available space. | | |
| 1 – 5.1 | Troy Torgersen | SN 15E – | Remove extraneous lines from letters B and R Response: Response: Confirmed this problem does not exist in full size layouts used by sign shops | | |
| 1 – 5.2 | Troy Torgersen | SN 15E | Correct extraneous line on numeral 8 Response: Confirmed this problem does not exist in full size layouts used by sign shops | A | |
| 1 – 5.3 | Troy Torgersen | SN 15E | Correct extraneous lines in numeral 6 Response: Confirmed this problem does not exist in full size layouts used by sign shops | | |
| 1 – 5.3 | Troy | SN 15E | Correct extraneous lines in numeral 6 | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | Sheet 3 | of | 6 |
| Date: | October 9, 2008 | Facilitator: | Wes Stakenburg | |

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| | | | | | |
|--------|---|-----------------|---|---|--|
| | Torgersen | | Response: Confirmed this problem does not exist in full size layouts used by sign shops | | |
| 1 –6.1 | Troy Torgersen | SN 15F | Vertical dimensions add up to 98", should be 96" | | |
| | | | Response: 23" dimension should be 21". Will Corrected. (Thanks for spotting this. It would have led to a lot of phone calls from sign makers) | | |
| 2 | Mike Donavan, Glenn Schulte, Roland Stanger | SN 15A – SN 15F | Combine drawings into two drawings | | |
| | | | Response: Done | | |
| 3 | Dave Krantz, Interwest | SN 15A – SN 15F | Standardization will clear confusion | | |
| | | | Response: Agree | | |
| 4 | Darin Duersch | SN 15A – SN 15F | Is blue on the body of sign really the appropriate color | | |
| | | | Response: Yes this is agreed upon color | | |
| 5 | Rick Torgerson | SN 15A – SN 15F | Where does it indicate which sign to use? Roland Stanger | | |
| | | | Response: Included note are which to use where | | |
| 6 | Lisa Wilson | SN 15A – SN 15F | May need smaller signs for certain applications i.e. ROW restricted areas. | | |
| | | | Response: Project can always make special signs as needed. Logos are available form Traffic and Safety | | |
| 7 | Kris Peterson | SN 15A – SN 15F | Add note instructing designer on which sign size to use | | |
| | | | Response: Included note are where to use which | | |
| 8 | Roland Stanger | SN 15A – SN 15F | Add note: Use sheeting that meets or exceeds ASTM Type IX | A | |
| | | | Response: Added note | | |
| 9 | Joe Kemmerer | SN 15A – SN 15F | OK as is | | |
| | | | Response: OK | | |
| 10 | Doug Basset | SN 15A – SN 15F | Ok as is | | |
| | | | Response: OK | | |
| 11 | Rob Clayton | SN 15A – SN 15F | One I-15 sign uses 8" letters; other freeway versions use 12". Is that intentional or oversight | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | Sheet 4 | of | 6 |
| Date: | October 9, 2008 | Facilitator: | Wes Stakenburg | |

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| | | | | | |
|--|--|--|-------------------------------------|--|--|
| | | | Intention. This was available space | | |
|--|--|--|-------------------------------------|--|--|

| | | | | | |
|----|-------------------|-----------------|--|--|--|
| 12 | Catherine Higgins | SN 15A – SN 15F | Needs smaller sign with abbreviated logo | | |
| | | | Response: Project can always make special signs as needed. Logos are available form Traffic and Safety | | |

| | | | | | |
|----|----------------|-----------------|----------------------------------|--|--|
| 13 | Victor Sanders | SN 15A – SN 15F | Standardization will likely help | | |
| | | | Agree | | |

| | | | | | |
|----|---------------|----------------|---|--|--|
| 14 | Barry Axelrod | SN 15A – SN 15 | Add SUPPLEMENTAL DRAWING in box on lower right of drawing | | |
| | | | Done | | |

| | | | | | |
|----|---------------|-----------------|--|--|--|
| 15 | Barry Axelrod | SN 15A – SN 15F | Add “New Drawing” in the revision area with WJS and meeting date | | |
| | | | Done | | |

| | | | | | |
|----|--------------|-----------------|---|--|--|
| 16 | Robert Miles | SN 15A – SN 15F | Place notes on drawings indication where the messaging comes from. (Region Traffic Engineer, Public Information Manager?) | | |
| | | | Added note to contact Engineer for info. | | |

| | | | | | |
|----|--------------|-----------------|--|--|--|
| 17 | Robert Miles | SN 15A – SN 15F | On some signs we mix use of “3” and “three”. Be consistent | | |
| | | | Corrected to use numerals | | |

| | | | | | |
|----|--------------|-----------------|---|--|--|
| 18 | Robert Miles | SN 15A – SN 15F | Add notes to drawings to indicate which projects get these signs, where different signs are used, what size signs are used. | | |
| | | | Done | | |

| | | | | | |
|----|---------------|-----------------|--|--|--|
| 19 | Robert Miles. | SN 15A – SN 15F | Must blue backing be type IX? Is Type IX available in blue? Must type IX be used for sign on wood posts used for 1 or 2 seasons. | | |
| | | | Type IX is required. Blue is available | | |

| | | | | | |
|----|--------------|-----------------|--------------------------------|--|--|
| 20 | Russ Tangren | SN 15A – SN 15F | After brief review, looks good | | |
| | | | OK | | |

| | | | | | |
|----|---------------|-----------------|--|--|--|
| 21 | Barry Axelrod | SN 15A – SN 15F | Add Note: Contact engineer for text to place on sign | | |
| | | | Added note to contact Engineer for info. | | |

| | | | | | |
|----|---------------|-----------------|--------------|--|--|
| 22 | Barry Axelrod | SN 15A – SN 15F | Number notes | | |
| | | | Done | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

Standard Drawing/Specification Review Sheet

Review Comments

| | | | | |
|---------------------|-----------------|--------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | Sheet 5 | of | 6 |
| Date: | October 9, 2008 | Facilitator: | Wes Stakenburg | |

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| | | | | | |
|----|----------------|-----------------|--|--|--|
| 23 | Barry Axelrod | SN 15A – SN 15F | Add notes as required for text on sign Added note to contact Engineer for info. | | |
| 24 | Barry Axelrod | SN 15A – SN 15F | Indicate how text will be added to sign Added note to contact Engineer for info. | | |
| 25 | Robert Miles | SN 15A – SN 15F | Add note to indicate how message is added Added note to contact Engineer for info. | | |
| 26 | Robert Miles | SN 15A – SN 15F | Use numerals rather than text as numbers Done | | |
| 27 | Robert Miles | SN 15A – SN 15F | Indicate where different sizes are used Done | | |
| 28 | Robert Miles | SN 15A – SN 15F | Confirm type IX available in blue Confirmed | | |
| 29 | Robert Miles | SN 15A – SN 15F | Can other than type IX be used as these are temporary signs No, type IX is standard | | |
| 30 | Richard Clarke | SN 15A – SN 15F | Looks good Agree | | |
| 31 | ACEC | SN 15A – SN 15F | Put drawings on one or two sheets Done | | |
| 32 | ACEC | SN 15A – SN 15F | Have dimensions match drawing scale Response: Signs are made in three sizes. This means that signs are shown schematically and will not be proportional to all dimensions | | |
| 33 | ACEC | SN 15A – SN 15F | Move to TC Drawings Done | | |
| 34 | ACEC | SN 15A – SN 15F | Indicate when sign sizes are used Done | | |
| 35 | ACEC | SN 15A – SN 15F | Give location of these signs in relationship to project limits signs Done | | |
| 36 | ACEC | SN 15A – SN 15F | Use interline spacing of ¾ of letter size, not ½ as shown Made text fit to available room | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

| Standard Drawing/Specification Review Sheet | | | Review Comments | | |
|---|-----------------|--|-----------------|----------------|---|
| Std Dwg/Spec Number | SN 15A – SN 15F | | Sheet 6 | of | 6 |
| Date: | October 9, 2008 | | Facilitator: | Wes Stakenburg | |

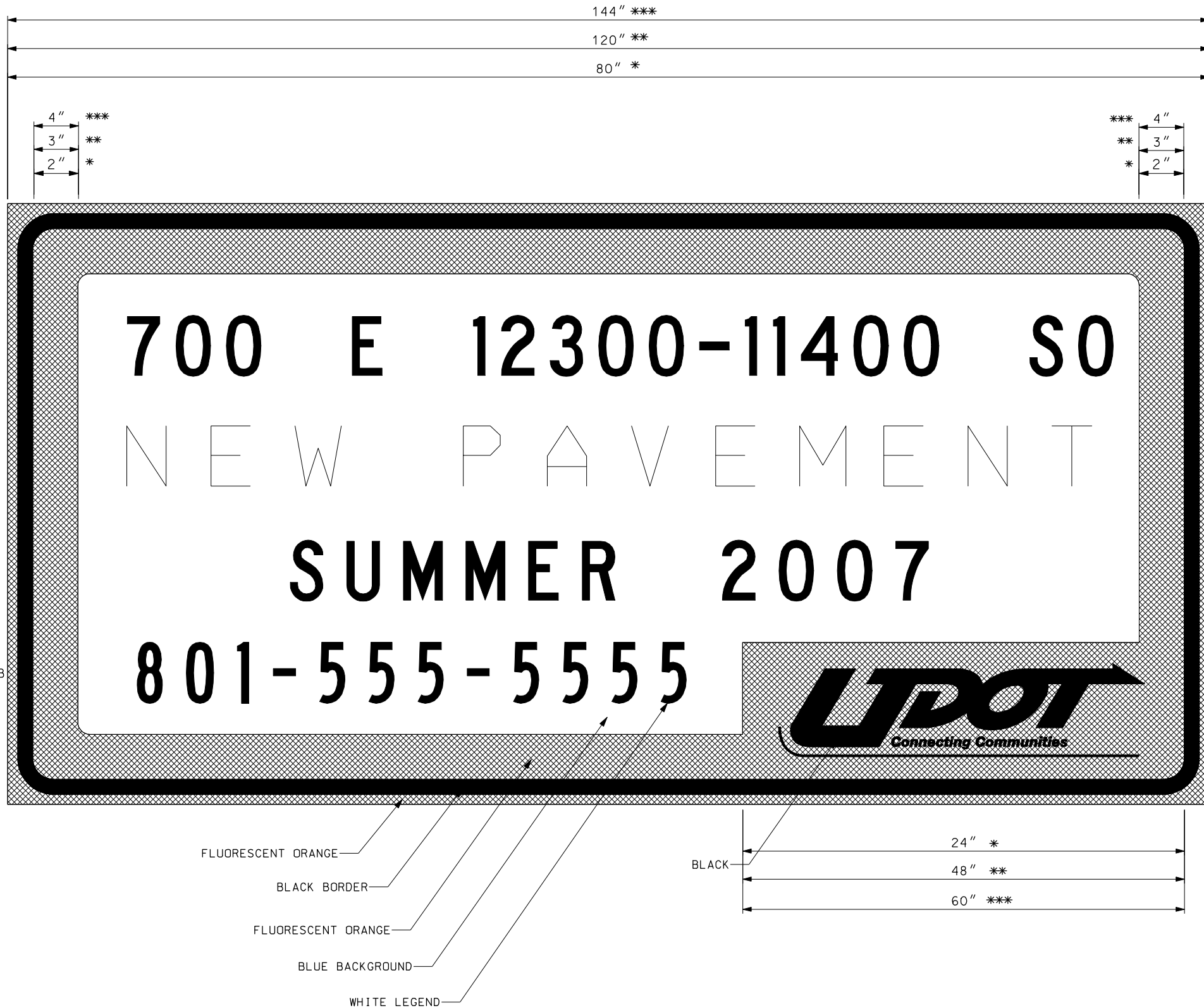
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| | | | | | |
|----|----------------------|-----------------|--|--|--|
| 37 | Kelly Barrett | SN 15A – SN 15F | Did not see anything that needs to be addressed | | |
| | | | OK | | |
| 38 | Anne Ogden | SN 15A – SN 15F | Specify which size is used where | | |
| | | | Done | | |
| 39 | Anne Ogden | SN 15D | Confirm that 3” text will be legible at highway speeds | | |
| | | | Response: 3” was max available space. As these are informational, not guide or regulatory, they should be OK | | |
| 40 | Mont Wilson, Granite | SN 15A – SN 15F | Commented via phone. Confirm that it is clear where this added item will be paid | | |
| | | | Done | | |
| 41 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Action Code | A | B | C | D |
|-------------|-----------------------|-----------------------|----------------|--------------------|
| | Submitter will Comply | Submitter to Evaluate | Delete Comment | Others to Evaluate |

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| | | |
|-----|----|----|
| *** | ** | * |
| 12" | 8" | 4" |
| 5" | 3" | 2" |
| 4" | 3" | 2" |



| | | | |
|---|--------|--------|--------|
| | * | ** | *** |
| | 3/4" | 1" | 1 1/2" |
| | 1 1/4" | 1 1/2" | 2" |
| | 2" | 3" | 4" |
| | 2" | 3" | 6" |
| C | 4" | 8" | 12" |
| | 3" | 4" | 8" |
| C | 4" | 8" | 12" |
| | 3" | 4" | 8" |
| C | 4" | 8" | 12" |
| | 2" | 3" | 6" |
| | 8" | 14" | 21" |
| | 1 1/4" | 1 1/2" | 2" |
| | 3/4" | 1" | 1 1/2" |

| | | |
|-----|-----|-----|
| 36" | 60" | 96" |
| * | ** | *** |

NOTES:

1. CONTACT ENGINEER FOR LEGEND TO BE PLACED ON SIGN.
2. USE SHEETING WHICH MEETS OR EXCEEDS TYPE IX.
3. FOR PLACEMENT OF SIGNS CONTACT ENGINEER.

- * 5' x 3' CONVENTIONAL ROAD
- ** 10' x 5' FREEWAY/EXPRESSWAY
- *** 12' x 8' SPECIAL EMPHASIS

SUPPLEMENTAL DRAWING

| | | | |
|--|----------|--|-------------|
| REVISIONS | | REMARKS | |
| 1 | 10/30/08 | WJS | NEW DRAWING |
| UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE APPROVED DEPUTY DIRECTOR | | | |
| PROJECT NOTIFICATION SIGN 5' x 3', 10' x 5', AND 12' x 8' STANDARD DRAWING TITLE | | DATE JAN.01.2008 DATE JAN.01.2008 | |
| STD DWG TC 4E | | Doc Page 5 | |

Action Item Update for October 30, 2008 Standards Committee Meeting

Item 1, Standards Committee Review Process. Item on agenda.

Item 2, Supplemental Specification 00727M, Control of Work and UDOT Policy 08-6, Use of Corporate Logos and Branding. Item on agenda.

Item 3, Supplemental Specification 03055, Portland Cement Concrete. Item on agenda.

Item 4, Concrete Specification Requirements for ABC. Stan Burns reported they formed a committee and had several meetings on the new Precast Concrete spec with several more to go. End of year should be a good target date. The next meeting is not until February 2009.

Item 5, Asphalt Specification Update. Due October 2008. George Lukes did not know what this item was about. Hopefully someone at the October meeting will have more information.

End of Agenda Package